FCC Test Report

Part 15 subpart C

Client Information:

Applicant : Plawa-Feinwerktechnik GmbH & Co. KG

Applicant add.: Bleichereistr.18,73066 Uhingen-Germany

EUT Information:

EUT Name : wireless file transfer food mixer

Model No. : SC200

Brand Name : N/A

FCC ID : 2AGCUSC200

Prepared By:

Shenzhen ECT Testing Technology Co., Ltd.

Add. : Room 1106, Era Innovation Certer, Xixiang gushu second road, Baoan district, Shenzhen city, China

Date of Receipt: Oct. 14, 2015 Date of Test: Oct. 15~20, 2015

Date of Issue: Oct. 20, 2015 Test Result: **Pass**

Test procedure used: ANSI C63.4-2009

This device described above has been tested by Shenzhen ECT Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by: Yandy Xie **Approved by:** Lori Mei

1 Contents

2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC Part 15 C:2013	Section 15.247(c)	**PASS**
Conduction Emissions	FCC Part 15 C:2013	Section 15.207(a)	**PASS**
Radiated Emissions	FCC Part 15 C:2013	Section 15.247(d)	**PASS**
6 dB Bandwidth	FCC Part 15 C:2013	Section 15.247 (a)	**PASS**
Maximum Peak Output Power	FCC Part 15 C:2013	Section 15.247(b) KDB-558074 D01 v03r03 Clause 9.1.2	**PASS**
Peak Power Spectral Density	FCC Part 15 C:2013	Section 15.247(e)	**PASS**
Band edge	FCC Part 15 C:2013	Section 15.247(d)	**PASS**
Conducted Spurious Emissions	FCC Part 15 C:2013	Section 15.247(d)	**PASS**

2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, The following measurements uncertainty Levels have estimated based on ANSI C63.4:2009, the maximum value of the uncertainty as below

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	Radiated Emission Test	±3.57dB

3 General Information

3.1 General Description of EUT

Manufacturer:	Plawa-Feinwerktechnik GmbH & Co. KG
Manufacturer Address:	Bleichereistr.18,73066 Uhingen-Germany
EUT Name:	wireless file transfer food mixer
Model No:	SC200
Brand Name:	N/A
Serial No:	N/A
Operation frequency:	2412 MHz to 2462 MHz for 802.11b/g/n(HT20) 2422 MHz to 2452 MHz for 802.11n(HT40)
Channel Number:	11 Channels for 802.11b/g/n(HT20) 7 Channels for 802.11n(HT40)
Modulation Technology:	802.11b: DSSS(CCK/QPSK/BPSK) 802.11g/n: OFDM(BPSK/QPSK/16QAM/64QAM)
Date rate:	802.11b: 1Mbps/2Mbps/5.5Mbps/11Mbps 802.11g: 6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps 802.11n(HT20):MCS=0/MCS=1/MCS=2/MCS=3/MCS=4/MCS=5/MCS=6/MCS=7 802.11b(HT40):MCS=0/MCS=1/MCS=2/MCS=3/MCS=4/MCS=5/MCS=6/MCS=7
Channel Separation:	5 MHz
AntennaType:	Integral
Antenna Gain:	3.06 dBi
Power Supply Range:	AC 120V 60Hz
Power Supply:	AC 120V/60Hz
Power Cord:	1.8 m x 3 wires unscreened AC mains cable

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

(1)Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447		

(2)Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442		
5	2432	8	2447		

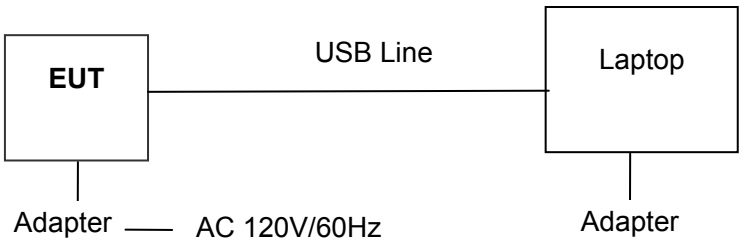
4. According to the declaration of the applicant, the electrical circuit design, layout, components used and internal wiring were identical for above models, with only difference being the model no.. Therefore, only one model **SC200** was tested in this report.

5. Pre-test all data rates, find the worst case in data rate of 802.11b/11 Mbps, 802.11g/54 Mbps, 802.11n(HT20)/MCS=7, 802.11n(HT40)/ MCS=7.

3.2 Description of Test conditions

(1) EUT was tested in normal configuration (Please See following Block diagram)

1. Block diagram of EUT configuration(TX Mode)



(2) E.U.T. test conditions:

15.31(e): For intentional radiators, measurements of the variation of the input power or the adiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

(3) Test frequencies:

According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. If required reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

(4) Frequency range of radiated measurements:

According to the 15.33, The test range will be up to the tenth harmonic of the highest fundamental frequency .

3.3 EUT Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3.4 Test Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	Lap top	ASUS	N/A	X401A	X16-96072	N/A	N/A
2	Adapter (laptop)	ASUS	N/A	EXA0703 YH	N/A	1.8m/unshielded /detachable	N/A

3.5 Test Location

All tests were performed at:

DONGGUAN UTL ELECTRONIC TECHNOLOGY CO., LTD.
1F,Hengzheng Bldg, North Road of Station, Nancheng District, DongGuan, GuangDong, China.

The FCC Registration No. of DONGGUAN UTL ELECTRONIC TECHNOLOGY CO., LTD. is 713614.

4 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	ADVANTEST	R3182	150900201	2015.10.16	2016.10.15
2	EMI Measuring Receiver	Schaffner	SCR3501	235	2015.10.16	2016.10.15
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2015.09.08	2016.09.07
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2015.04.08	2016.04.07
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2015.07.05	2016.07.04
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120A	451	2015.07.05	2016.07.04
7	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.09.08	2016.09.07
8	EMI Test Receiver	R&S	ESCI	100124	2014.12.29	2015.12.28
9	LISN	Kyoritsu	KNW-242	8-837-4	2015.04.08	2016.04.07
10	LISN	Kyoritsu	KNW-407	8-1789-3	2015.04.08	2016.04.07
11	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.04.08	2016.04.07
12	Loop Antenna	ARA	PLA-1030/B	1029	2015.04.08	2016.04.07
13	Power Meter	R&S	NRVS	101336	2015.04.08	2016.04.07
14	EMI Test Receiver	Rohde & Schwarz	ESIB26	100394	2015.04.08	2016.04.07

5 Test Result

5.1 Antenna Requirement

5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band and 5725-5850 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

5.1.2 EUT Antenna

The 2.4GHz antenna is integrated on the main PCB and no consideration of replacement. Antenna gain is max 3.06 dBi from 2.4GHz to 2.5GHz.

5.2 Conduction Emissions Measurement

5.2.1 Applied procedures / Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note: Decreases with the logarithm of the frequency.

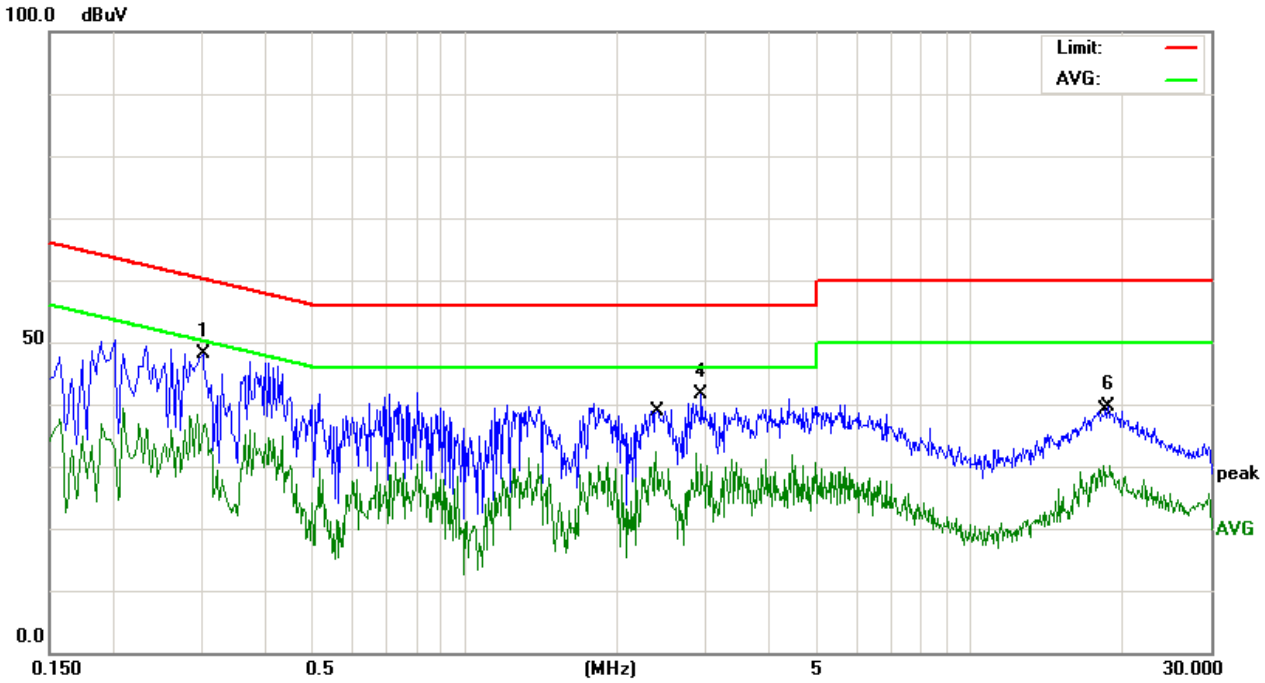
5.2.2 Test procedure

EUT was placed upon a wooden test table 0.8m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and placed at a distance of 10cm from each other. A spectrum and receiver was connected to the RF output port of the AMN. Both average and quasi-peak value were detected.

5.2.3 Test results

EUT:	wireless file transfer food mixer	Model Name. :	SC200
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2015-10-18
Test Mode:	TX	Phase :	Line
Test Voltage :	AC 120V/60Hz		

Level(dBμV)

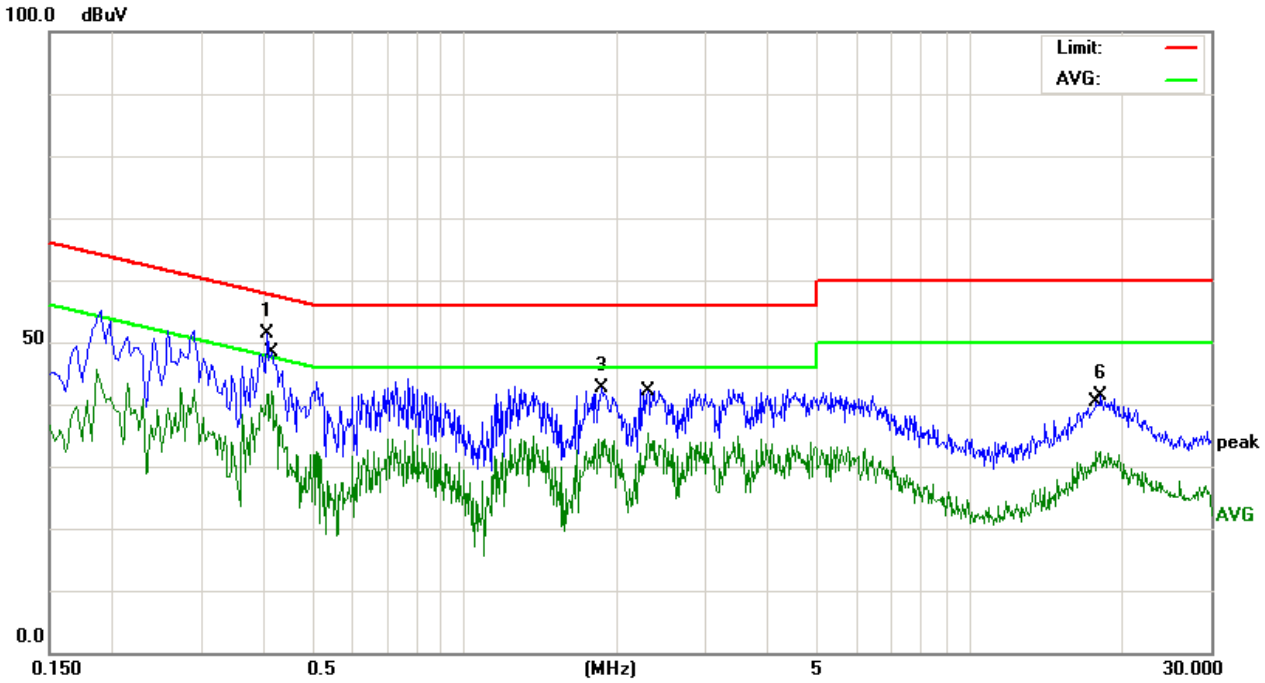


Measure data:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.3020	47.02	1.19	48.21	60.19	-11.98	QP
2		0.3060	35.61	1.18	36.79	50.08	-13.29	AVG
3		2.3940	22.47	10.01	32.48	46.00	-13.52	AVG
4		2.9380	31.67	10.03	41.70	56.00	-14.30	QP
5		18.3300	28.26	1.83	30.09	50.00	-19.91	AVG
6		18.7700	37.79	1.88	39.67	60.00	-20.33	QP

EUT:	wireless file transfer food mixer	Model Name. :	SC200
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2015-10-18
Test Mode:	TX	Phase :	Neutral
Test Voltage :	AC 120V/60Hz		

Level(dBμV)



Measure result:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.4060	50.35	1.05	51.40	57.73	-6.33	QP
2	*	0.4140	41.07	1.04	42.11	47.57	-5.46	AVG
3		1.8620	32.75	9.99	42.74	56.00	-13.26	QP
4		2.2980	25.30	10.00	35.30	46.00	-10.70	AVG
5		17.7740	30.59	1.76	32.35	50.00	-17.65	AVG
6		18.1700	39.52	1.81	41.33	60.00	-18.67	QP

5.3 Radiated Emissions Measurement

5.3.1 Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Frequency of Emission (MHz)	Field Strength		Measurement Distance (meters)
	μV/m	dBμV/m	
0.009-0.49	2400/F(kHz)		300
0.49-1.705	24000/F(kHz)		30
1.705-30	30		30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

5.3.2 Test procedure

EUT was placed upon a wooden test table which was placed on the turn table 0.8m above the horizontal metal ground plane, and operating in the mode as mentioned above. A receiving antenna was placed 3m away from the EUT. During testing, turn around the turn table and move the antenna from 1m to 4m to find the maximum field-strength reading. All peripherals were placed at a distance of 10cm between each other. Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

5.3.3 Test Result

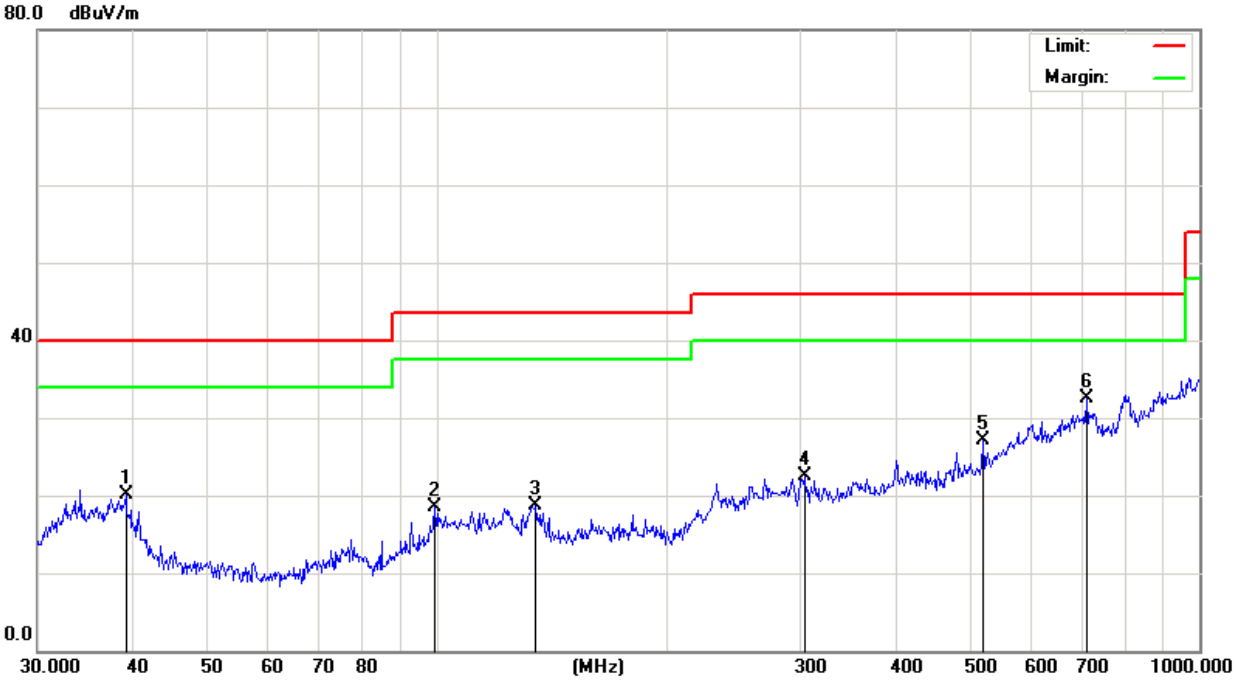
There is not detected below 30MHz.

EUT：	wireless file transfer food mixer	Model Name ：	SC200
Temperature：	25 ℃	Test Data	2015-10-18
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	TX	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	30MHz to 1GHz
RBW/VBW	100KHz / 300KHz for spectrum, RBW=120KHz for receiver.		

(a) Antenna polarization: Horizontal

Peak scan

Level (dBμV/m)



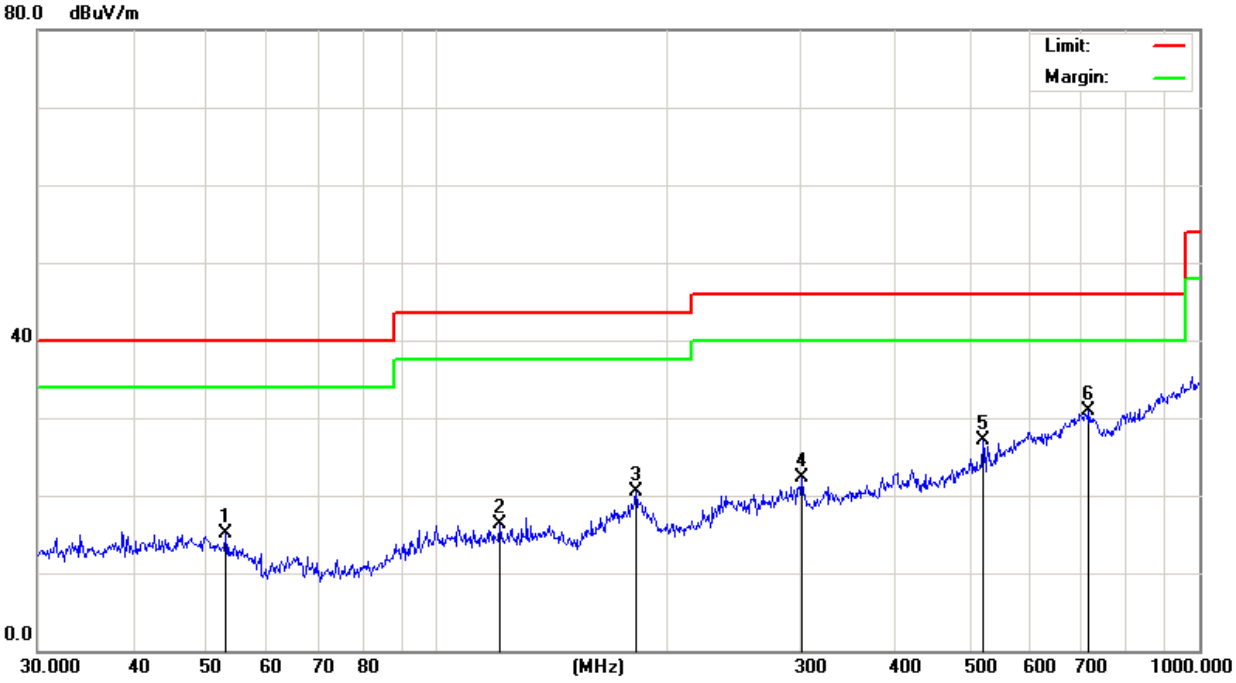
Quasi-peak measurement

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		39.1616	36.66	-16.64	20.02	40.00	-19.98	QP
2		99.5279	32.77	-14.30	18.47	43.50	-25.03	QP
3		135.0319	33.35	-14.72	18.63	43.50	-24.87	QP
4		303.5437	31.97	-9.45	22.52	46.00	-23.48	QP
5		520.8881	32.17	-4.97	27.20	46.00	-18.80	QP
6	*	711.6734	32.92	-0.47	32.45	46.00	-13.55	QP

(b) Antenna polarization: vertical

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		52.9453	30.43	-15.30	15.13	40.00	-24.87	QP
2		121.1230	31.25	-14.96	16.29	43.50	-27.21	QP
3		182.5592	31.09	-10.55	20.54	43.50	-22.96	QP
4		301.4223	31.82	-9.55	22.27	46.00	-23.73	QP
5		520.8881	31.98	-4.97	27.01	46.00	-18.99	QP
6	*	716.6820	31.40	-0.41	30.99	46.00	-15.01	QP

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

EUT：	wireless file transfer food mixer	Model Name ：	SC200
Temperature：	25 ℃	Test Data	2015-10-18
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	802.11b	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4824.000	57.42	5.08	62.50	74.00	-11.50	peak
4824.000	43.23	5.08	48.31	54.00	-5.69	AVG
7236.000	48.29	7.16	55.45	74.00	-18.55	peak
7236.000	37.01	7.16	44.17	54.00	-9.83	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4824.000	57.65	5.08	62.73	74.00	-11.27	peak
4824.000	42.44	5.08	47.52	54.00	-6.48	AVG
7236.000	49.09	7.16	56.25	74.00	-17.75	peak
7236.000	39.10	7.16	46.26	54.00	-7.74	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Lowest Channel : 2412 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	57.75	5.13	62.88	74.00	-11.12	peak
4874.000	42.22	5.13	47.35	54.00	-6.65	AVG
7311.000	48.77	7.49	56.26	74.00	-17.74	peak
7311.000	36.38	7.49	43.87	54.00	-10.13	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	58.02	5.13	63.15	74.00	-10.85	peak
4874.000	44.09	5.13	49.22	54.00	-4.78	AVG
7311.000	48.37	7.49	55.86	74.00	-18.14	peak
7311.000	36.54	7.49	44.03	54.00	-9.97	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Middle Channel : 2437 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4924.000	56.92	5.18	62.10	74.00	-11.90	peak
4924.000	41.25	5.18	46.43	54.00	-7.57	AVG
7386.000	50.45	7.82	58.27	74.00	-15.73	peak
7386.000	37.83	7.82	45.65	54.00	-8.35	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4924.000	57.53	5.18	62.71	74.00	-11.29	peak
4924.000	42.41	5.18	47.59	54.00	-6.41	AVG
7386.000	50.69	7.82	58.51	74.00	-15.49	peak
7386.000	36.80	7.82	44.62	54.00	-9.38	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Highest Channel : 2462 MHz

EUT：	wireless file transfer food mixer	Model Name ：	SC200
Temperature：	25 ℃	Test Data	2015-10-18
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	802.11g	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4824.000	55.50	5.08	60.58	74.00	-13.42	peak
4824.000	43.56	5.08	48.64	54.00	-5.36	AVG
7236.000	47.56	7.16	54.72	74.00	-19.28	peak
7236.000	36.33	7.16	43.49	54.00	-10.51	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4824.000	56.14	5.08	61.22	74.00	-12.78	peak
4824.000	43.22	5.08	48.30	54.00	-5.70	AVG
7236.000	49.08	7.16	56.24	74.00	-17.76	peak
7236.000	37.02	7.16	44.18	54.00	-9.82	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Lowest Channel : 2412 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	54.28	5.13	59.41	74.00	-14.59	peak
4874.000	41.23	5.13	46.36	54.00	-7.64	AVG
7311.000	48.59	7.49	56.08	74.00	-17.92	peak
7311.000	35.98	7.49	43.47	54.00	-10.53	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	54.28	5.13	59.41	74.00	-14.59	peak
4874.000	41.89	5.13	47.02	54.00	-6.98	AVG
7311.000	46.77	7.49	54.26	74.00	-19.74	peak
7311.000	35.64	7.49	43.13	54.00	-10.87	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Middle Channel : 2437 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4924.000	54.42	5.18	59.60	74.00	-14.40	peak
4924.000	37.69	5.18	42.87	54.00	-11.13	AVG
7386.000	47.51	7.82	55.33	74.00	-18.67	peak
7386.000	35.80	7.82	43.62	54.00	-10.38	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4924.000	54.68	5.18	59.86	74.00	-14.14	peak
4924.000	42.92	5.18	48.10	54.00	-5.90	AVG
7386.000	46.41	7.82	54.23	74.00	-19.77	peak
7386.000	35.70	7.82	43.52	54.00	-10.48	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Highest Channel : 2462 MHz

EUT：	wireless file transfer food mixer	Model Name ：	SC200
Temperature：	25 ℃	Test Data	2015-10-18
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	802.11n(HT20)	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4824.000	53.47	5.08	58.55	74.00	-15.45	peak
4824.000	42.12	5.08	47.20	54.00	-6.80	AVG
7236.000	48.60	7.16	55.76	74.00	-18.24	peak
7236.000	36.66	7.16	43.82	54.00	-10.18	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4824.000	52.22	5.08	57.30	74.00	-16.70	peak
4824.000	40.78	5.08	45.86	54.00	-8.14	AVG
7236.000	47.05	7.16	54.21	74.00	-19.79	peak
7236.000	35.67	7.16	42.83	54.00	-11.17	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Lowest Channel : 2412 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	53.47	5.13	58.60	74.00	-15.40	peak
4874.000	39.09	5.13	44.22	54.00	-9.78	AVG
7311.000	47.00	7.49	54.49	74.00	-19.51	peak
7311.000	35.24	7.49	42.73	54.00	-11.27	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	53.18	5.13	58.31	74.00	-15.69	peak
4874.000	41.32	5.13	46.45	54.00	-7.55	AVG
7311.000	47.24	7.49	54.73	74.00	-19.27	peak
7311.000	35.67	7.49	43.16	54.00	-10.84	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Middle Channel : 2437 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4924.000	53.39	5.18	58.57	74.00	-15.43	peak
4924.000	40.23	5.18	45.41	54.00	-8.59	AVG
7386.000	46.86	7.82	54.68	74.00	-19.32	peak
7386.000	35.68	7.82	43.50	54.00	-10.50	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4924.000	52.91	5.18	58.09	74.00	-15.91	peak
4924.000	41.25	5.18	46.43	54.00	-7.57	AVG
7386.000	46.45	7.82	54.27	74.00	-19.73	peak
7386.000	34.66	7.82	42.48	54.00	-11.52	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Highest Channel : 2462 MHz

EUT：	wireless file transfer food mixer	Model Name ：	SC200
Temperature：	25 ℃	Test Data	2015-10-18
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	802.11n(HT40)	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4844.000	51.63	5.11	56.74	74.00	-17.26	peak
4844.000	38.04	5.11	43.15	54.00	-10.85	AVG
7266.000	44.36	7.29	51.65	74.00	-22.35	peak
7266.000	33.02	7.29	40.31	54.00	-13.69	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4844.000	49.09	5.11	54.20	74.00	-19.80	peak
4844.000	37.62	5.11	42.73	54.00	-11.27	AVG
7266.000	44.36	7.29	51.65	74.00	-22.35	peak
7266.000	32.78	7.29	40.07	54.00	-13.93	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Lowest Channel : 2422 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	50.64	5.13	55.77	74.00	-18.23	peak
4874.000	38.38	5.13	43.51	54.00	-10.49	AVG
7311.000	43.27	7.49	50.76	74.00	-23.24	peak
7311.000	33.35	7.49	40.84	54.00	-13.16	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4874.000	50.03	5.13	55.16	74.00	-18.84	peak
4874.000	38.30	5.13	43.43	54.00	-10.57	AVG
7311.000	43.08	7.49	50.57	74.00	-23.43	peak
7311.000	31.95	7.49	39.44	54.00	-14.56	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Middle Channel : 2437 MHz

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4904.000	51.02	5.16	56.18	74.00	-17.82	peak
4904.000	39.04	5.16	44.20	54.00	-9.80	AVG
7356.000	43.66	7.69	51.35	74.00	-22.65	peak
7356.000	32.98	7.69	40.67	54.00	-13.33	AVG

Horizontal Measurement:

Frequency (MHz)	Reading Level (dBμV)	factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization
4904.000	50.46	5.16	55.62	74.00	-18.38	peak
4904.000	38.69	5.16	43.85	54.00	-10.15	AVG
7356.000	43.07	7.69	50.76	74.00	-23.24	peak
7356.000	32.59	7.69	40.28	54.00	-13.72	AVG

Note: **8~25GHz at least have 20dBm margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor = Antenna Factor + Cable Loss – Pre-amplifier

Highest Channel : 2452 MHz

5.3.4 TEST RESULTS (Restricted Bands Requirements)

EUT：	wireless file transfer food mixer	Model Name ：	SC200
Temperature：	26 ℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Note：	For 2.4GHz Band: 1. The transmitter was setup to transmit at the lowest channel . Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel . Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

802.11b								
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant/CF CF(dB)	Act		Limit	
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
2390.00	V	45.17	33.84	-5.79	39.38	28.05	74.00	54.00
2390.00	H	44.68	27.43	-5.79	38.89	21.64	74.00	54.00
2483.50	V	42.33	28.56	-4.98	37.35	23.58	74.00	54.00
2483.50	H	42.67	27.25	-4.98	37.69	22.27	74.00	54.00

802.11g								
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant/CF CF(dB)	Act		Limit	
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
2390.00	V	45.21	30.52	-5.79	39.42	24.73	74.00	54.00
2390.00	H	46.57	31.41	-5.79	40.78	25.62	74.00	54.00
2483.50	V	44.26	29.88	-4.98	39.28	24.90	74.00	54.00
2483.50	H	43.72	28.16	-4.98	38.74	23.18	74.00	54.00

802.11n(HT20)								
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant/CF CF(dB)	Act		Limit	
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
2390.00	V	43.15	29.47	-5.79	37.36	23.68	74.00	54.00
2390.00	H	44.68	30.16	-5.79	38.89	24.37	74.00	54.00
2483.50	V	43.25	29.87	-4.98	38.27	24.89	74.00	54.00
2483.50	H	41.58	29.20	-4.98	36.60	24.22	74.00	54.00

802.11n(HT40)								
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant/CF CF(dB)	Act		Limit	
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
2390.00	V	40.50	27.24	-5.79	34.71	21.45	74.00	54.00
2390.00	H	39.28	28.54	-5.79	33.49	22.75	74.00	54.00
2483.50	V	39.74	27.13	-4.98	34.76	22.15	74.00	54.00
2483.50	H	38.59	28.66	-4.98	33.61	23.68	74.00	54.00

Remark：

(1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode

(2) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(3) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

(4) No any other emission which falls in restricted bands can be detected and be reported.

Test result: The unit does meet the FCC requirements.

5.4 BANDWIDTH TEST

5.4.1 Applied procedures / Limit

15.247 (a)(2)Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5MHz,5725-5850MHz. The minimum 6 dB bandwidth shall be at least 500 kHz.

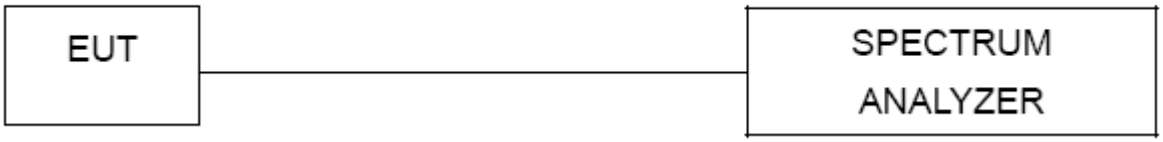
5.4.2 Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW= 100KHz, VBW≧3*RBW, Sweep time = Auto Detector Function=Peak..

5.4.3 Deviation from standard

No deviation.

5.4.4 Test setup



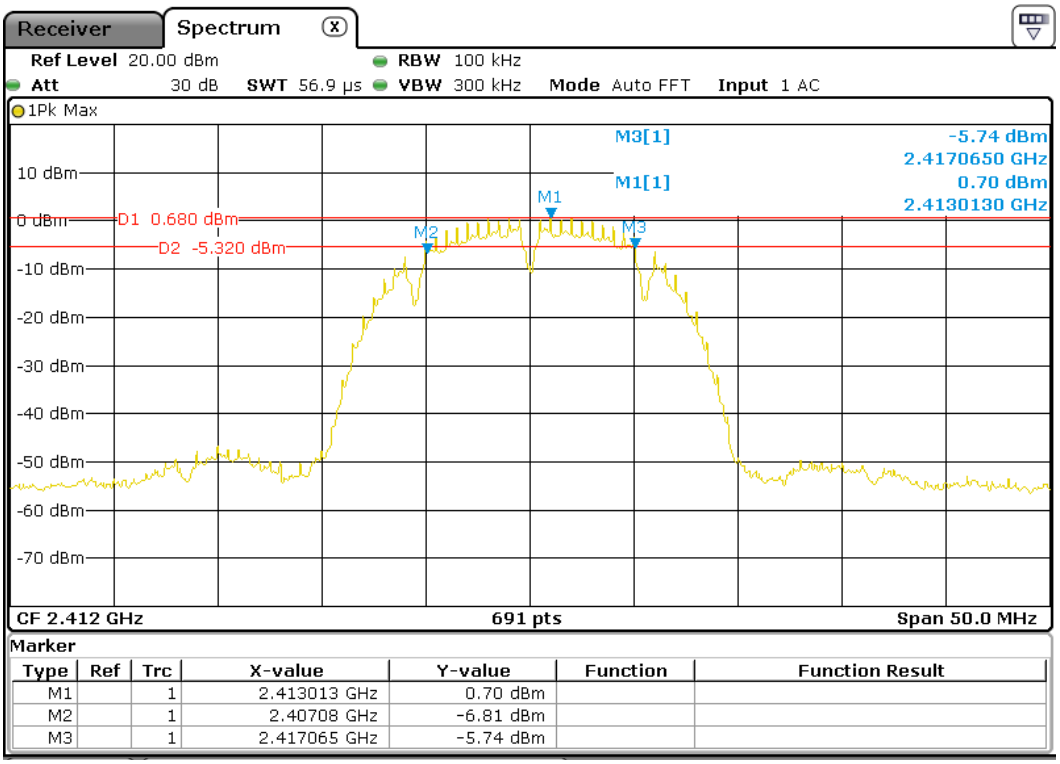
5.4.5 Test results

Channel No.	Frequency (MHz)	Mode	Measured 6dB bandwidth (MHz)	Limit	Result
1	2412	802.11b	9.985	≥500KHz	Pass
6	2437		10.202		Pass
11	2462		10.238		Pass
1	2412	802.11g	16.498	≥500KHz	Pass
6	2437		16.534		Pass
11	2462		16.498		Pass
1	2412	802.11n (HT20)	17.656	≥500KHz	Pass
6	2437		17.619		Pass
11	2462		17.655		Pass
3	2422	802.11n (HT40)	36.47	≥500KHz	Pass
6	2437		35.89		Pass
9	2452		36.47		Pass

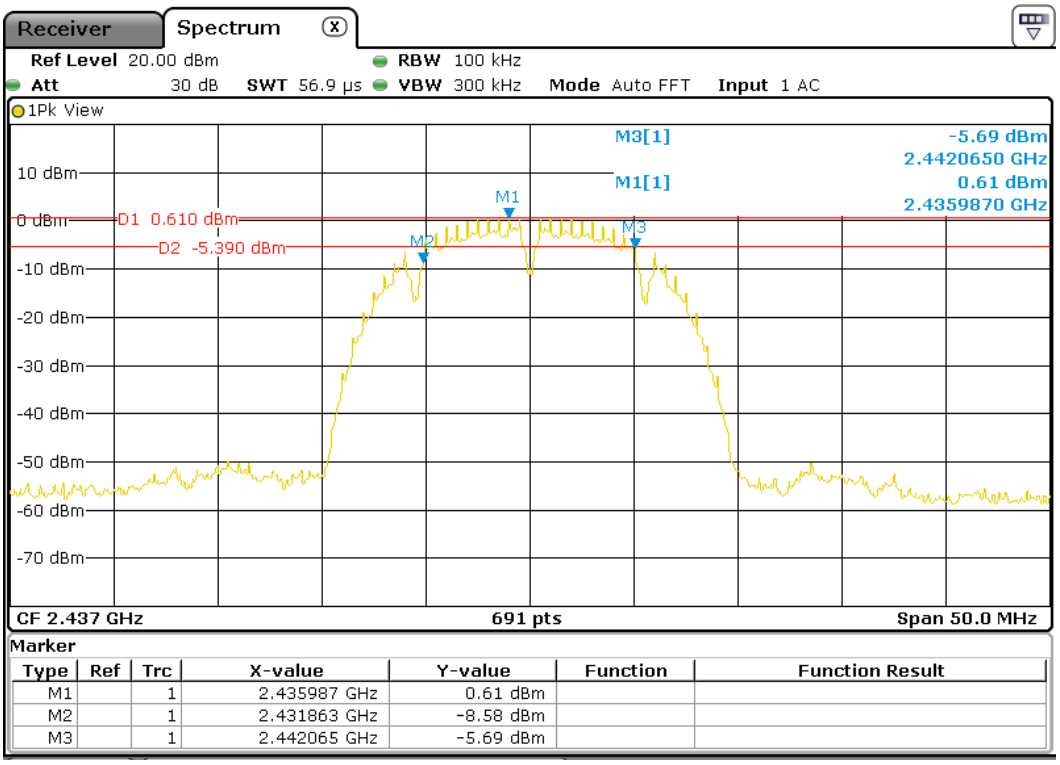
Test result: The unit does meet the FCC requirements.

Result plot as follows:

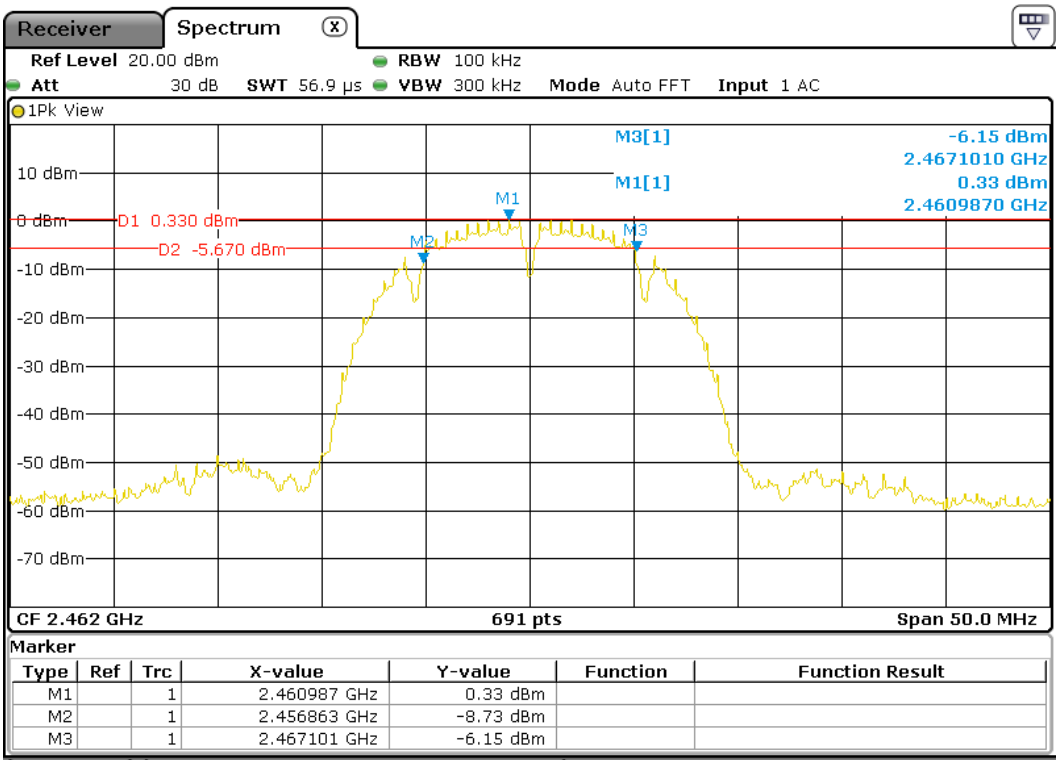
802.11b/2412MHz



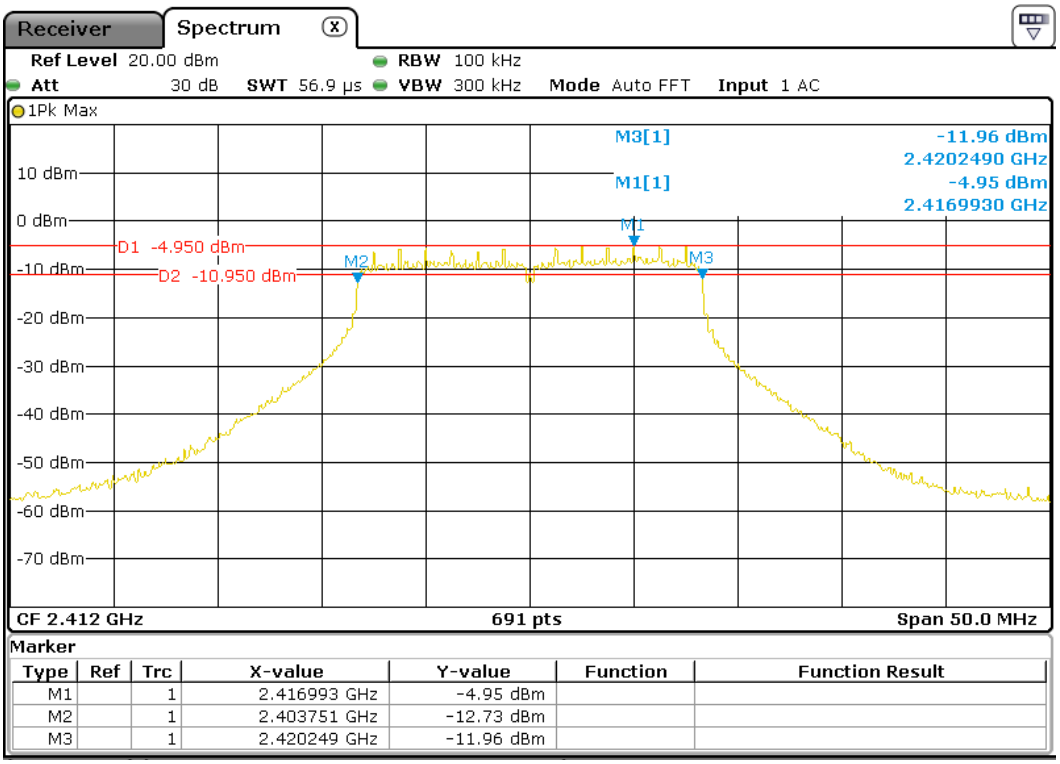
802.11b/2437MHz



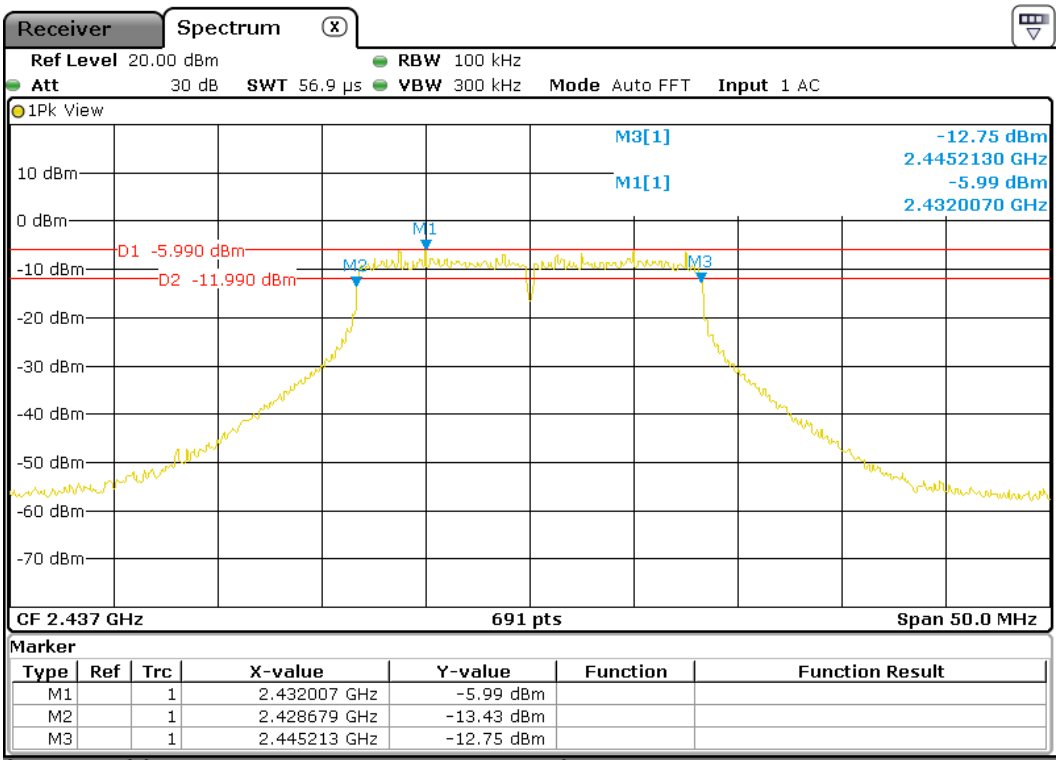
802.11b/2462MHz



802.11g/2412MHz



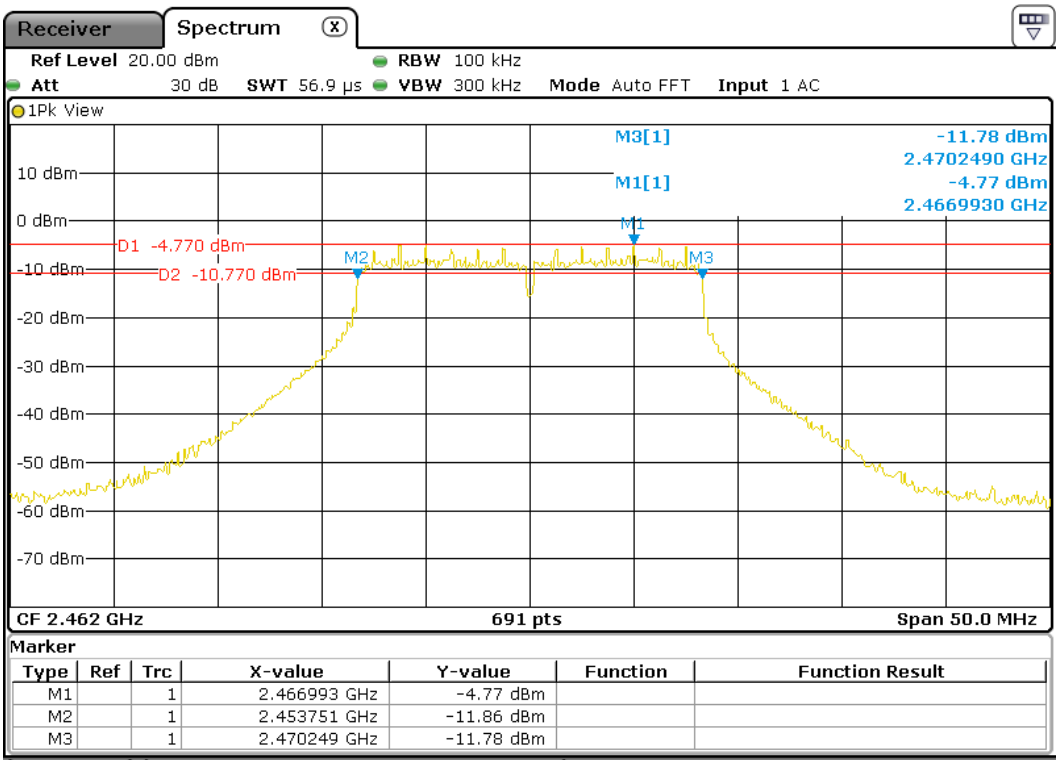
802.11g/2437MHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.432007 GHz	-5.99 dBm		
M2		1	2.428679 GHz	-13.43 dBm		
M3		1	2.445213 GHz	-12.75 dBm		

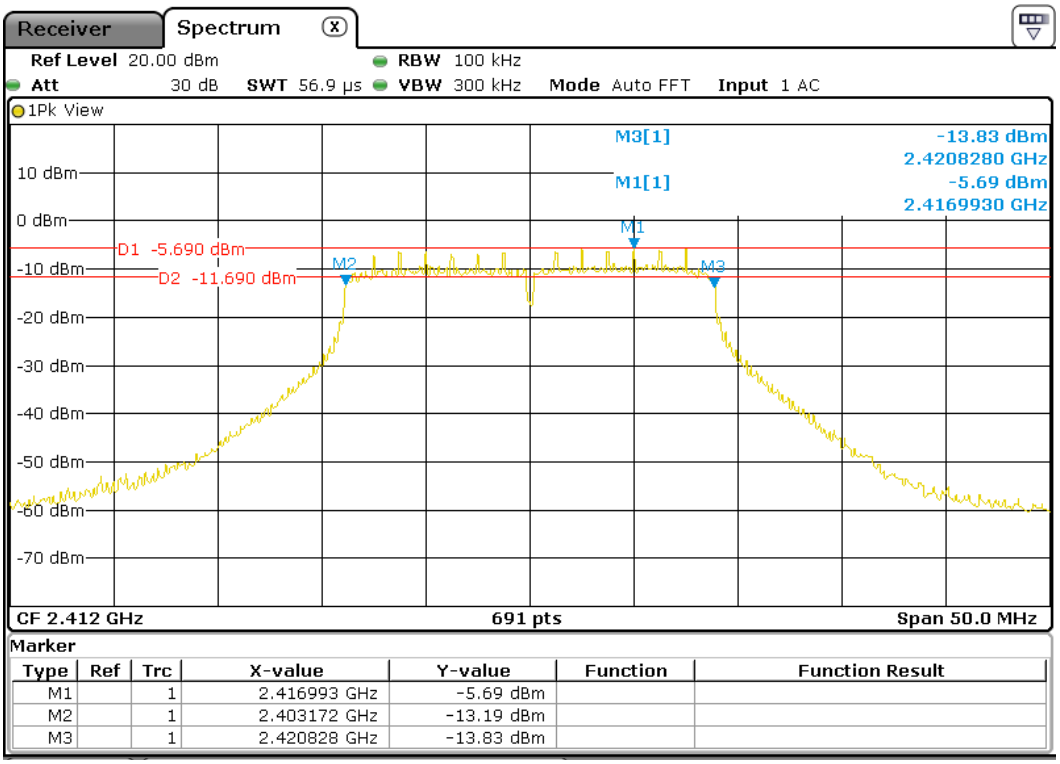
802.11g/2462MHz



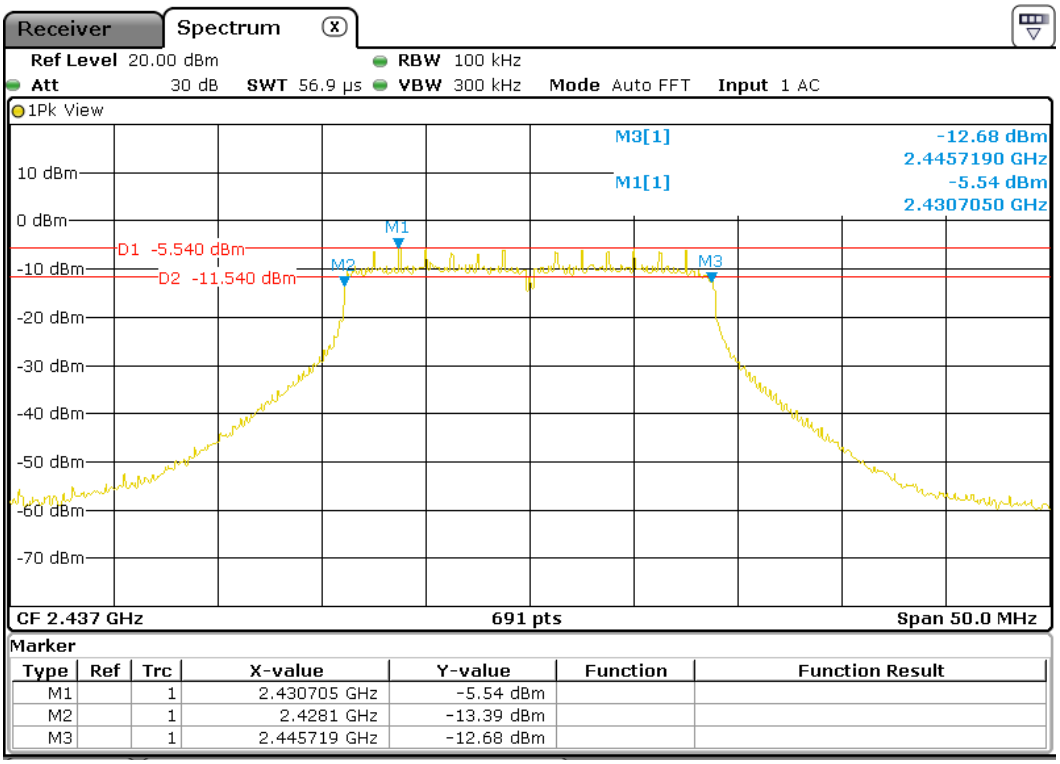
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.466993 GHz	-4.77 dBm		
M2		1	2.453751 GHz	-11.86 dBm		
M3		1	2.470249 GHz	-11.78 dBm		

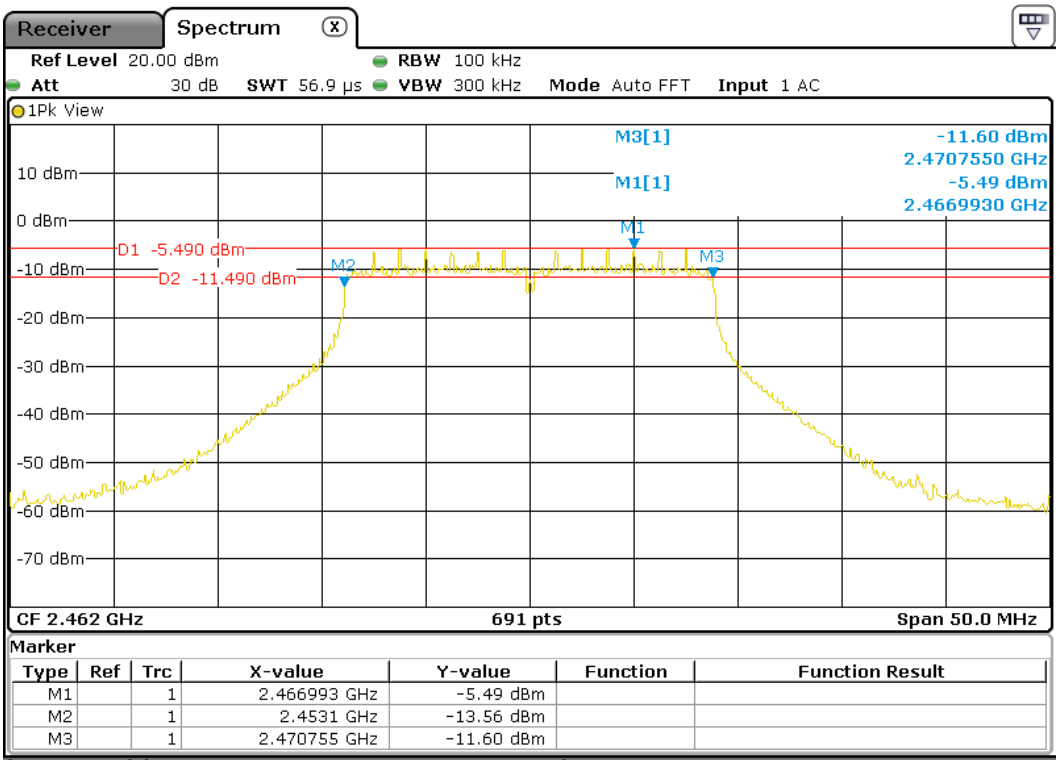
802.11n(HT20)/2412MHz



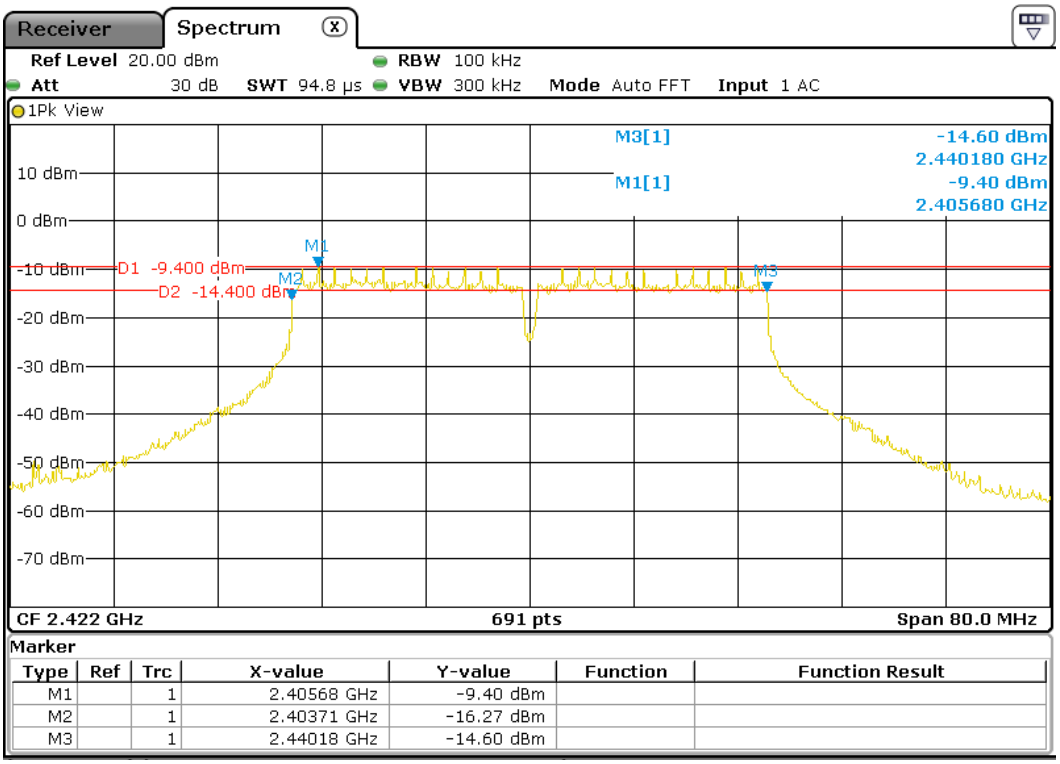
802.11n(HT20)/2437MHz



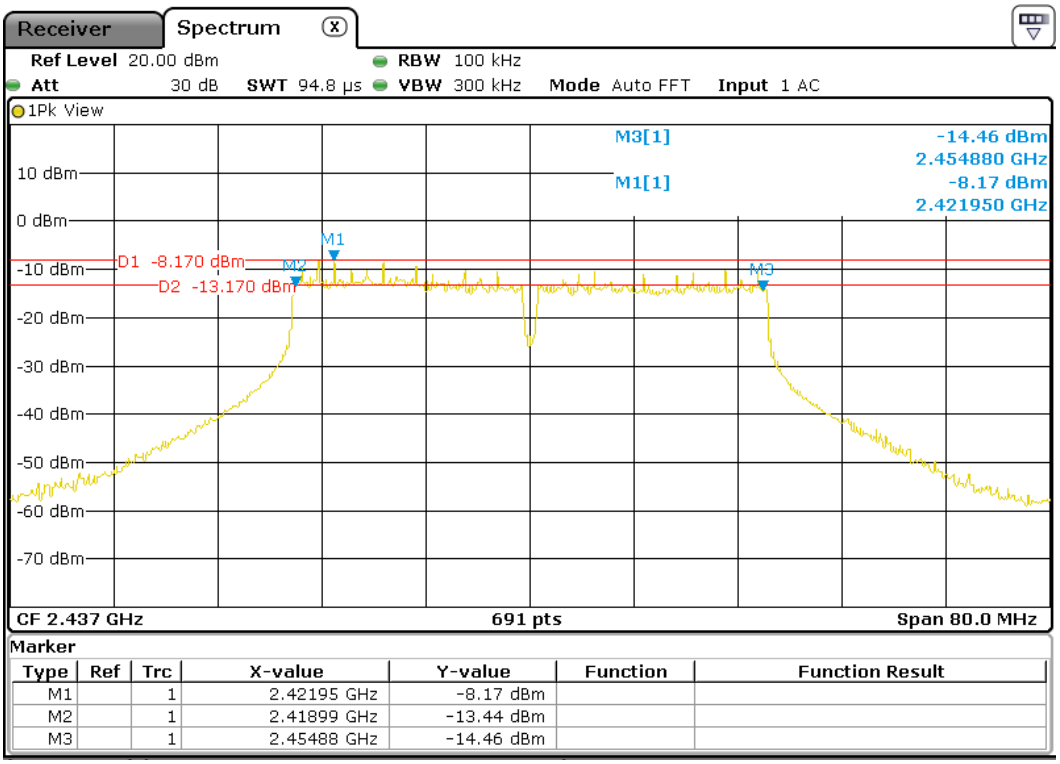
802.11n(HT20)/2462MHz



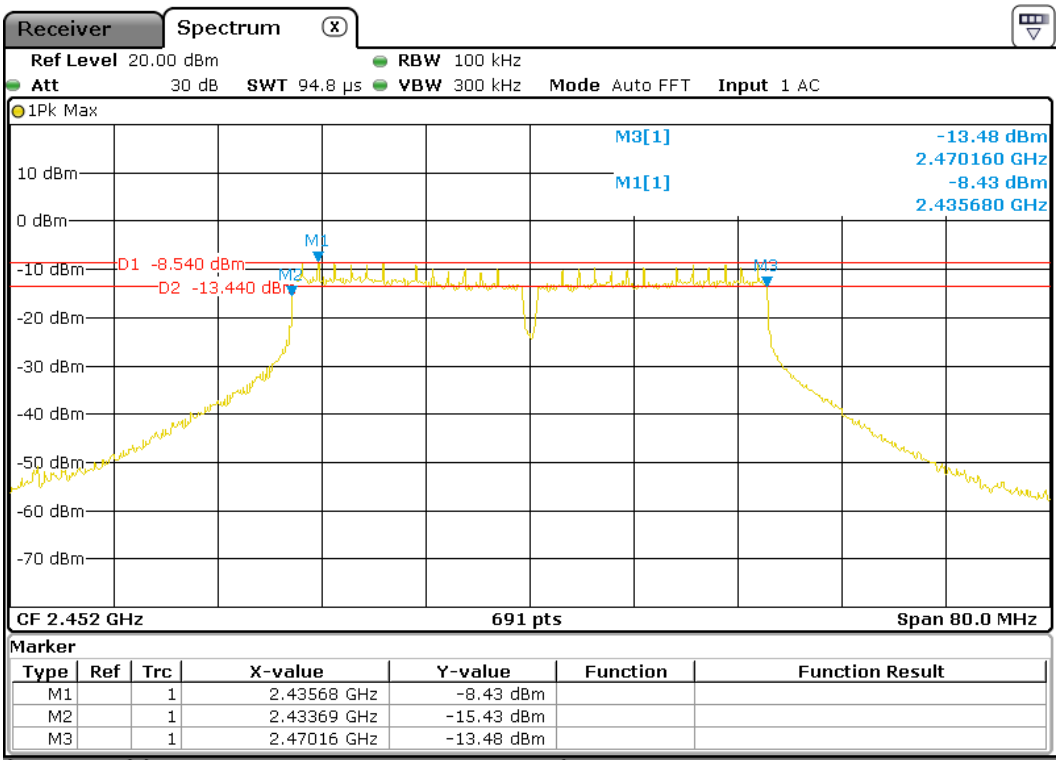
802.11n(HT40)/2422MHz



802.11n(HT40)/2437MHz



802.11n(HT40)/2452MHz



5.5 Maximum Peak Output Power

5.5.1 Applied procedures / Limit

15.247 (b)(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz band: 1 Watt.

5.5.2 Test procedure

FCC/KDB-558074 D01 v03r03 Clause 9.1.2.

(1) Connected the antenna port to the broadband peak RF power meter, Allow the transmitted power to stabilize, record the max peak value.

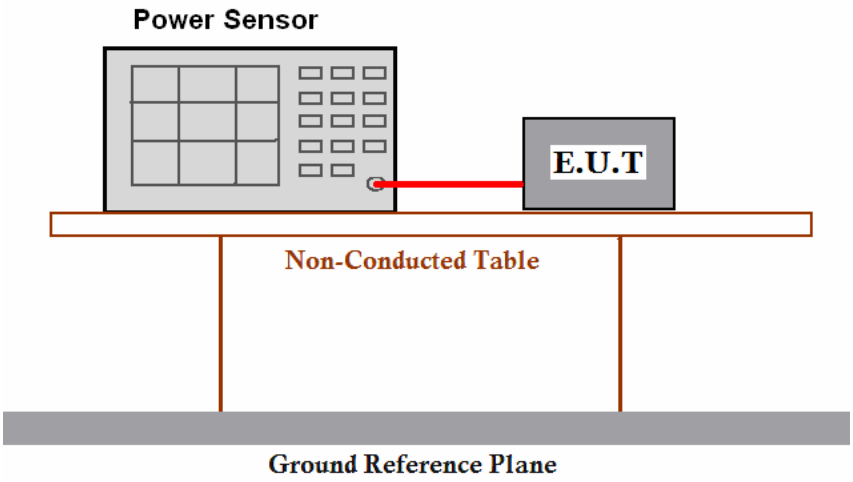
(2) The EUT should be transmitting at its maximum data rate.

(3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation.

5.5.3 Deviation from standard

No deviation.

5.5.4 Test setup



5.5.5 Test results

Channel No.	Frequency (MHz)	Mode	Measured Power (dBm)	Limit	Result
1	2412	802.11b	12.84	1W(30dBm)	Pass
6	2437		13.21		Pass
11	2462		13.45		Pass
1	2412	802.11g	14.37		Pass
6	2437		14.77		Pass
11	2462		14.67		Pass
1	2412	802.11n (HT20)	13.18		Pass
6	2437		13.78		Pass
11	2462		13.83		Pass
3	2422	802.11n (HT40)	10.16		Pass
6	2437		10.18		Pass
9	2452		10.79		Pass

Remark: Level = Read Level + Cable Loss.

The unit does meet the FCC requirements.

5.6 Peak Power Spectral Density

5.6.1 Applied procedures / Limit

15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.6.2 Test procedure

(1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as
CENTER FREQUENCY = Frequency from Power Spectral Density Test Matrix (see 6.10.2)
SPAN = 20 MHz (For devices with a nominal 40 MHz BW, 50 MHz span will be needed)
REFERENCE LEVEL = 20 dBm, ATTENUATION = 0 dB (add internal attenuation, if necessary)
SWEEP TIME = Coupled, RBW = 3 kHz, VBW = 10 kHz, DETECTOR = Peak

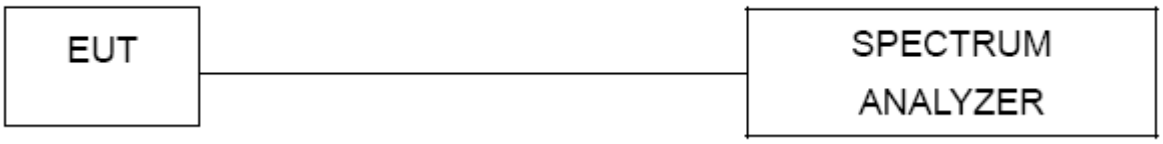
(2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

(3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation

5.6.3 Deviation from standard

No deviation.

5.6.4 Test setup



5.6.5 Test results

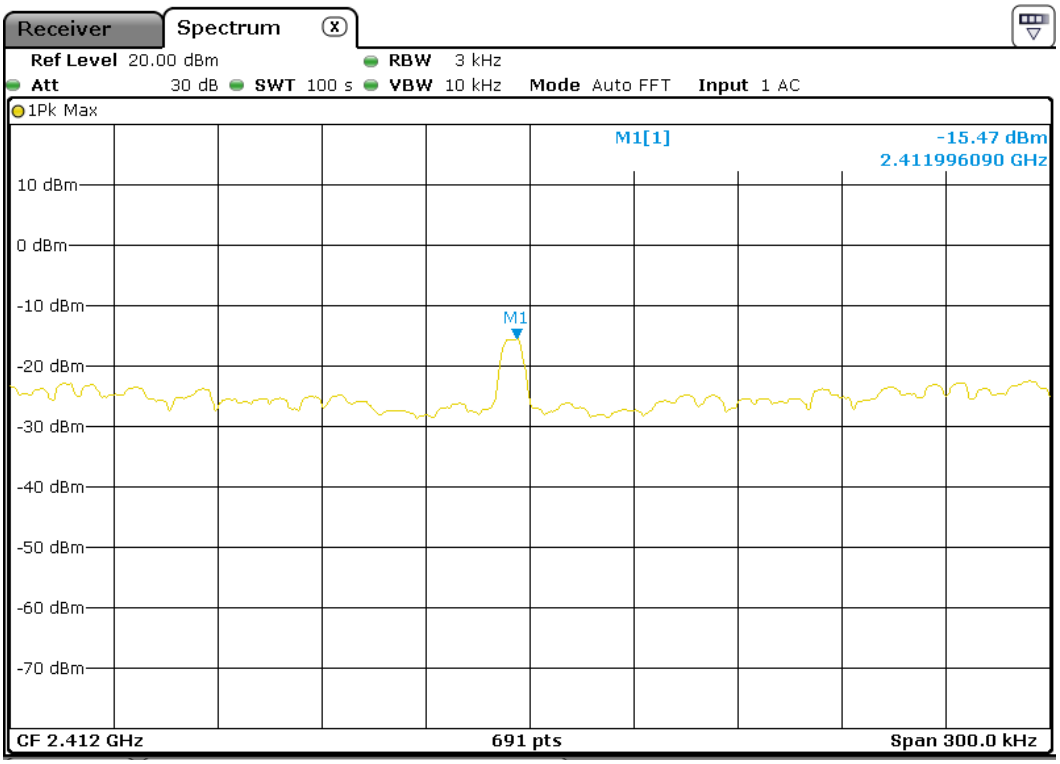
Channel No.	Frequency (MHz)	Mode	Measured Peak Power Spectral Density (dBm/3KHz)	Limit	Result
1	2412	802.11b	-15.47	8dBm/3KHz	Pass
6	2437		-22.21		Pass
11	2462		-22.18		Pass
1	2412	802.11g	-15.06		Pass
6	2437		-25.24		Pass
11	2462		-24.87		Pass
1	2412	802.11n (HT20)	-27.06		Pass
6	2437		-14.89		Pass
11	2462		-15.47		Pass
3	2422	802.11n (HT40)	-33.22		Pass
6	2437		-34.21		Pass
9	2452		-34.08		Pass

Test result: Level = Read Level + Cable Loss.

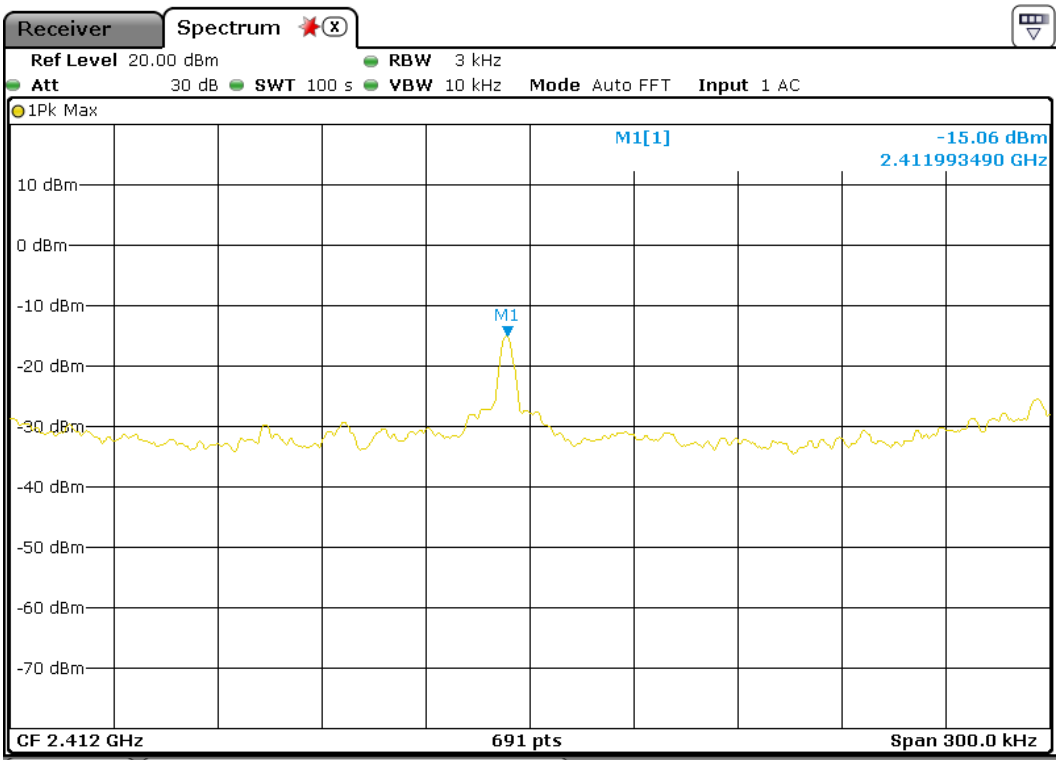
The unit does meet the FCC requirements.

Result plot as follows:

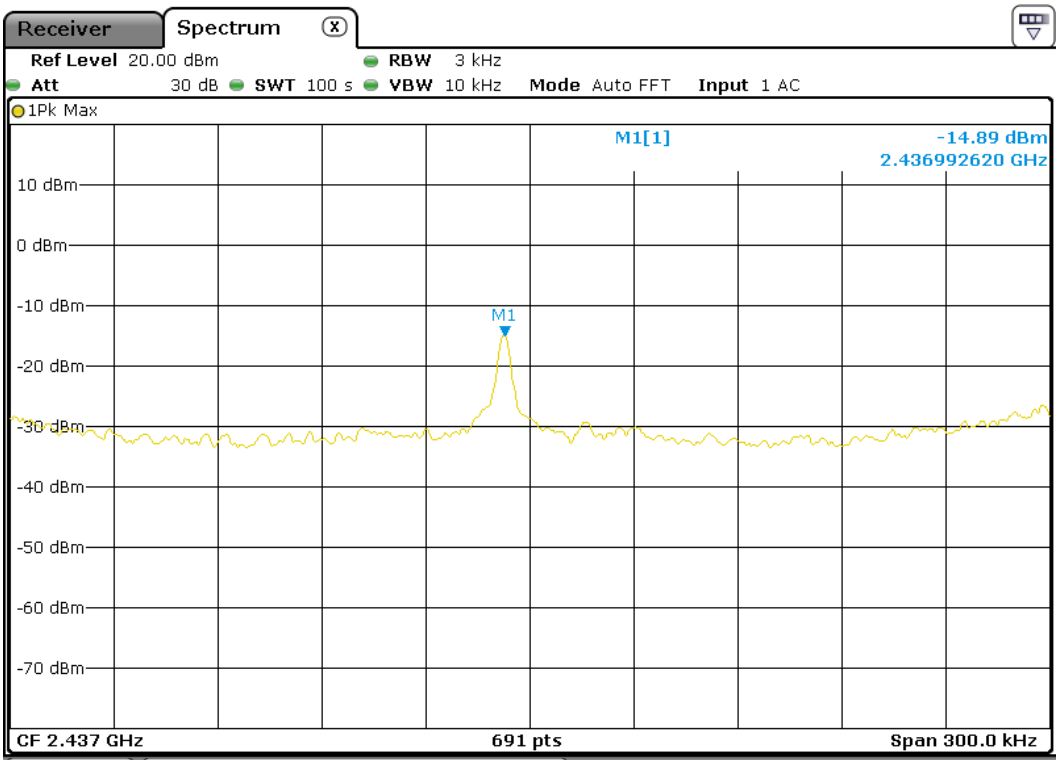
802.11b/2412MHz(worst case)



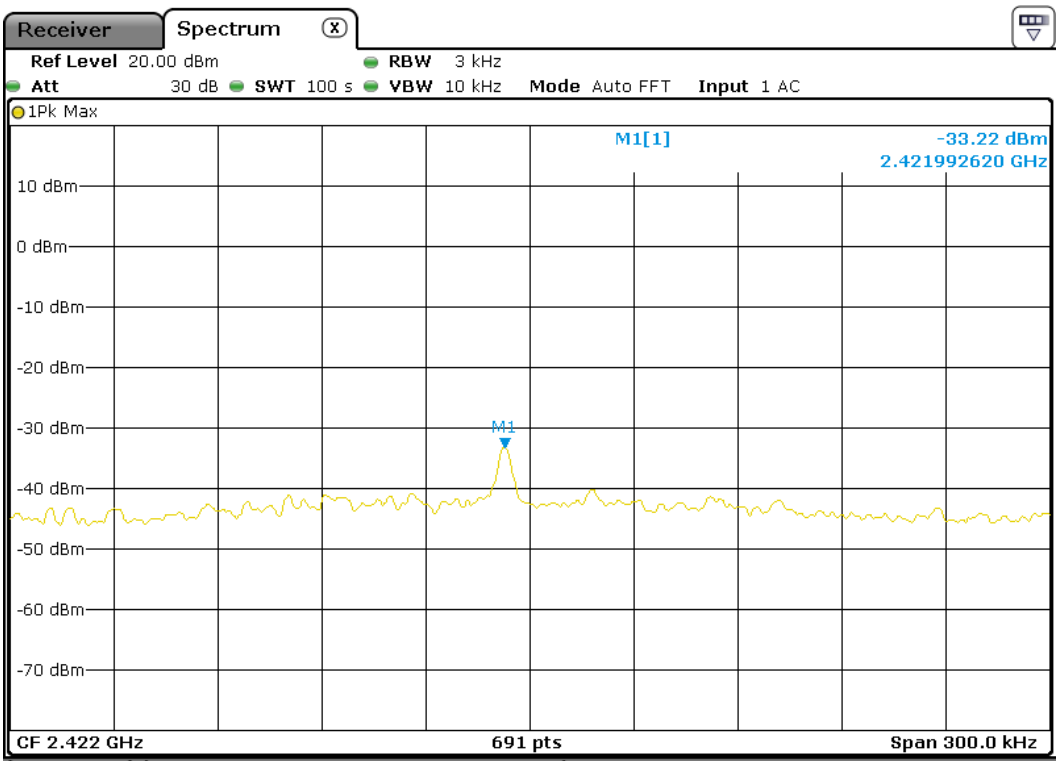
802.11g/2412MHz(worst case)



802.11n(HT20)/2437MHz(worst case)



802.11n(HT40)/2422MHz(worst case)



5.7 Band edge

5.7.1 Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Based on either an RF conducted or a radiated measurement. Provided the transmitter demonstrates compliance with the peak conducted power limits.

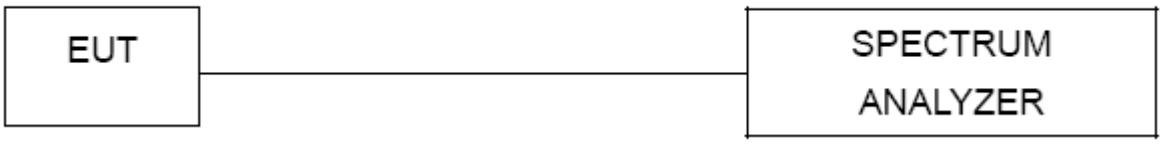
5.7.2 Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW=100kHz, VBW≧RBW, Sweep time=Auto, Detector Function=Peak.

5.7.3 Deviation from standard

No deviation.

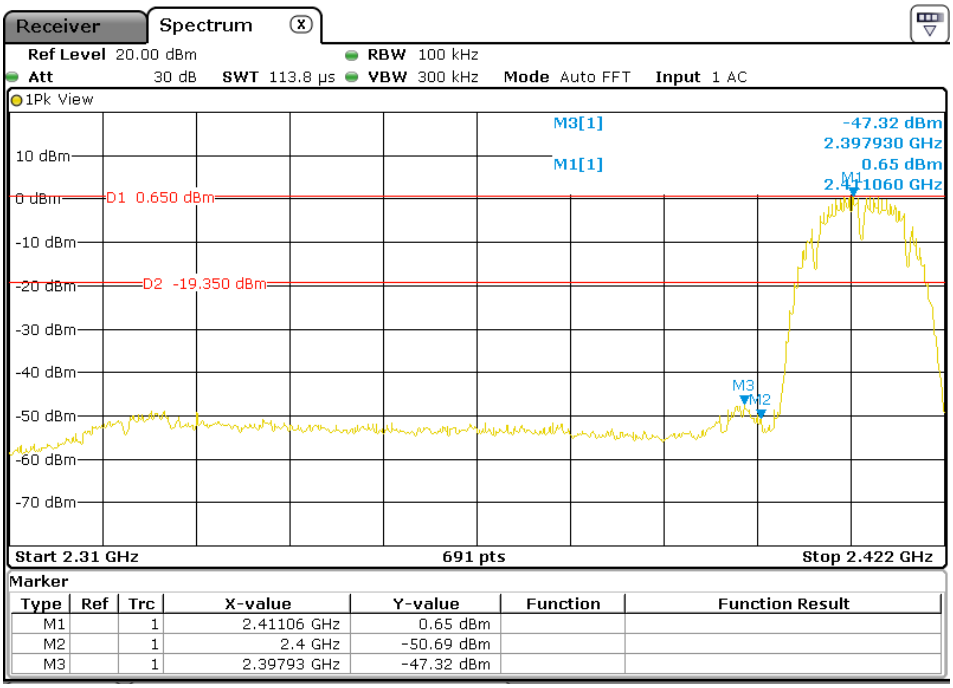
5.7.4 Test setup



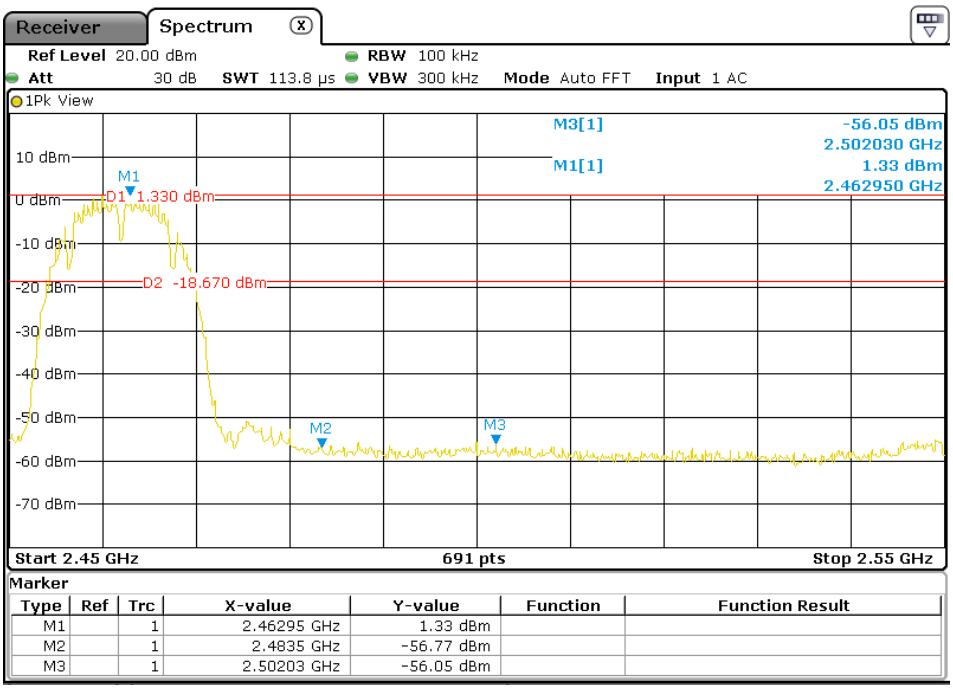
5.7.5 Test results

Result plot as follows:

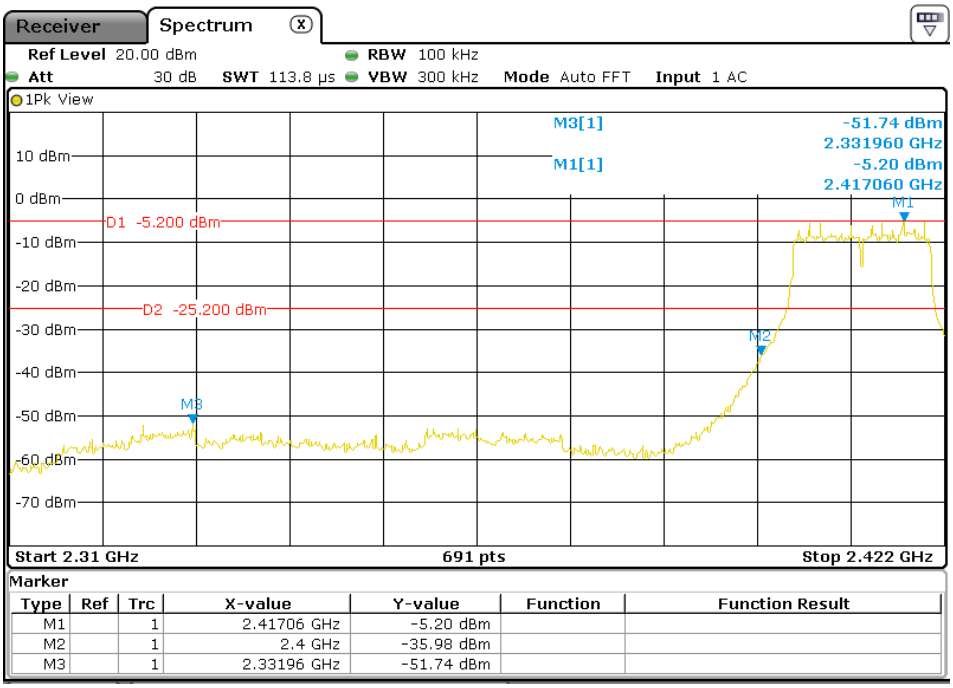
802.11b/lowest channel



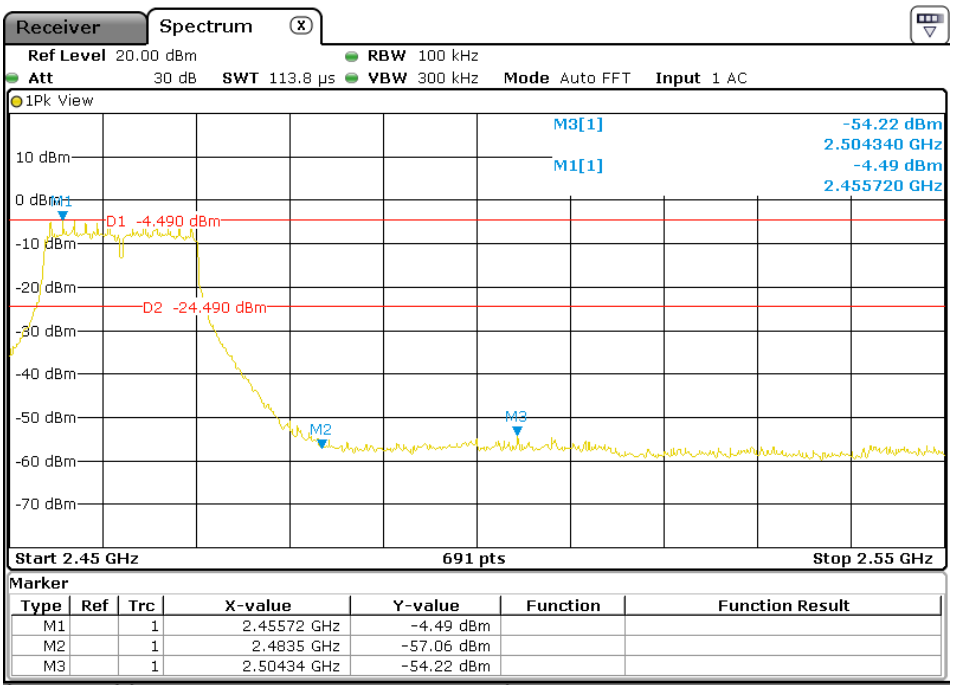
802.11b/highest channel



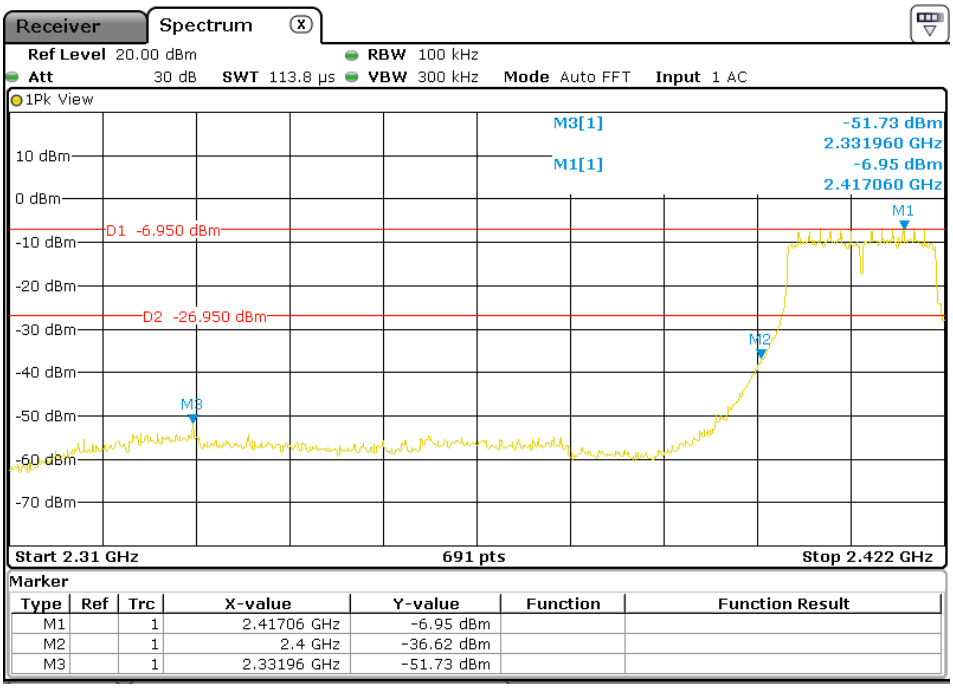
802.11g/lowest channel



802.11g/highest channel



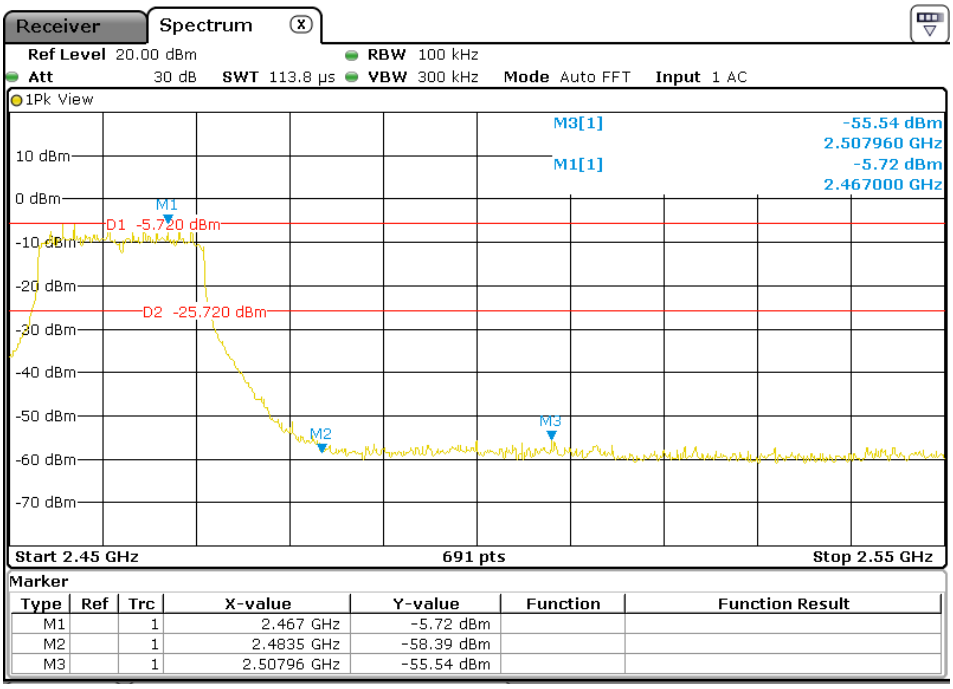
802.11n(HT20)/lowest channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41706 GHz	-6.95 dBm		
M2		1	2.4 GHz	-36.62 dBm		
M3		1	2.33196 GHz	-51.73 dBm		

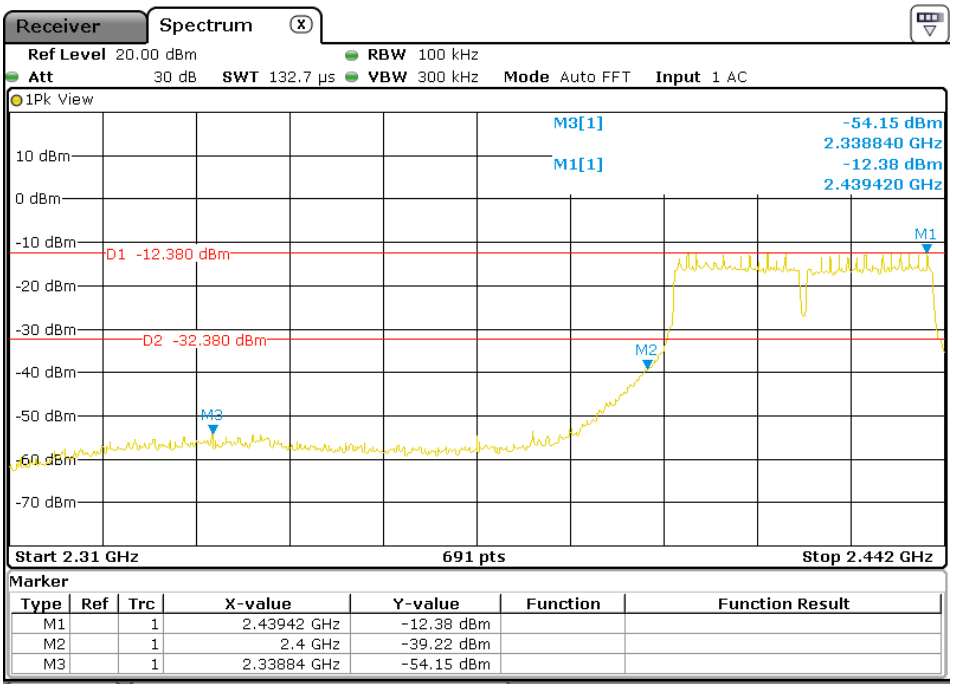
802.11n(HT20)/highest channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.467 GHz	-5.72 dBm		
M2		1	2.4835 GHz	-58.39 dBm		
M3		1	2.50796 GHz	-55.54 dBm		

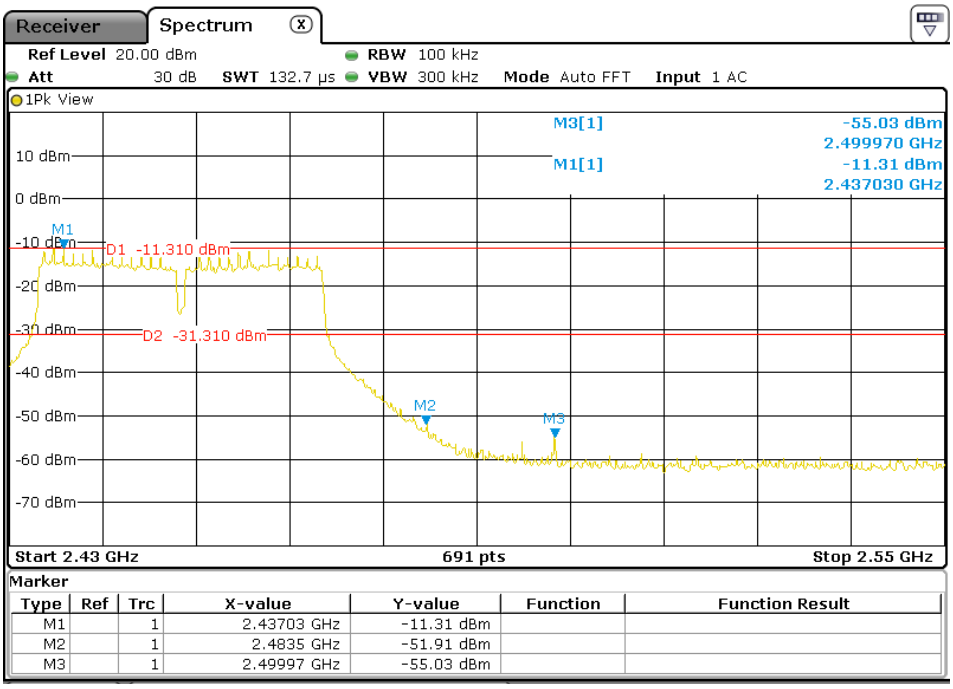
802.11n(HT40)/lowest channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.43942 GHz	-12.38 dBm		
M2		1	2.4 GHz	-39.22 dBm		
M3		1	2.33884 GHz	-54.15 dBm		

802.11n(HT40)/highest channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.43703 GHz	-11.31 dBm		
M2		1	2.4835 GHz	-51.91 dBm		
M3		1	2.49997 GHz	-55.03 dBm		

5.8 Conducted Spurious Emissions

5.8.1 Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

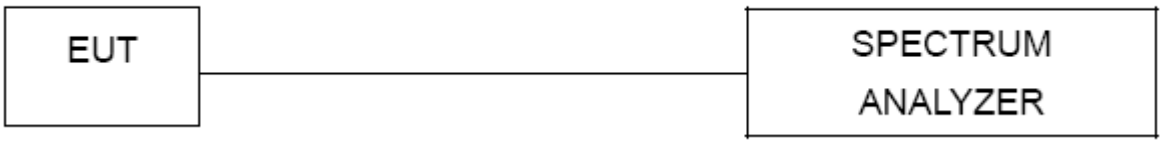
5.8.2 Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW=100kHz, VBW≧RBW, Sweep time=Auto, Detector Function=Peak.

5.8.3 Deviation from standard

No deviation.

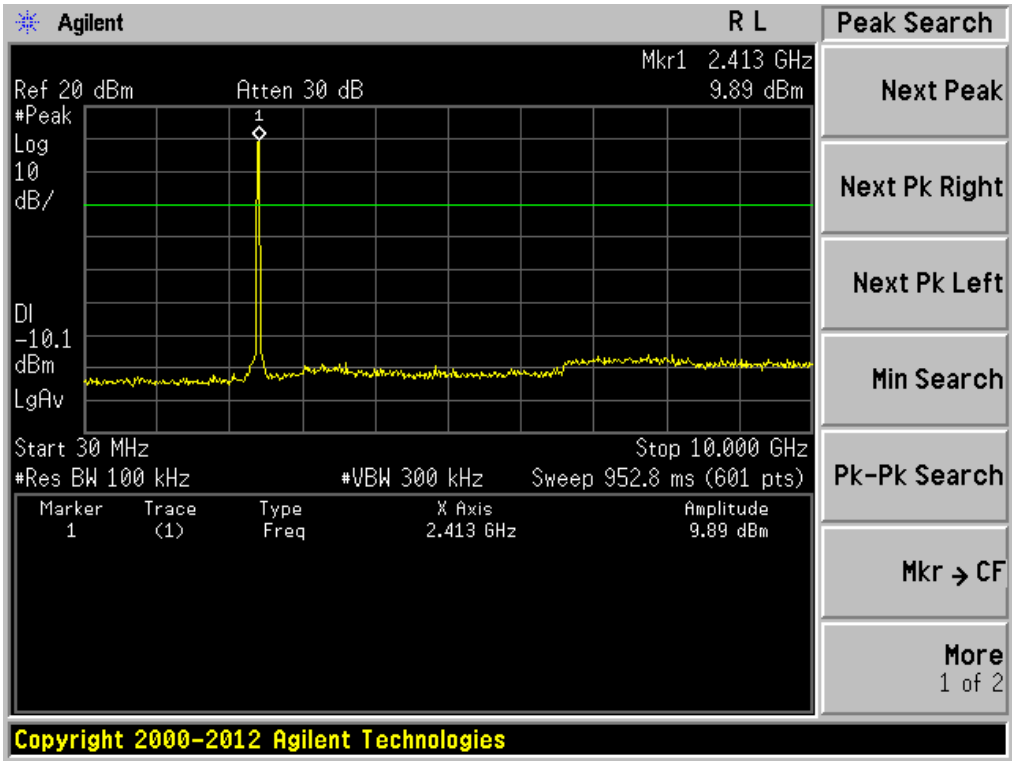
5.8.4 Test setup

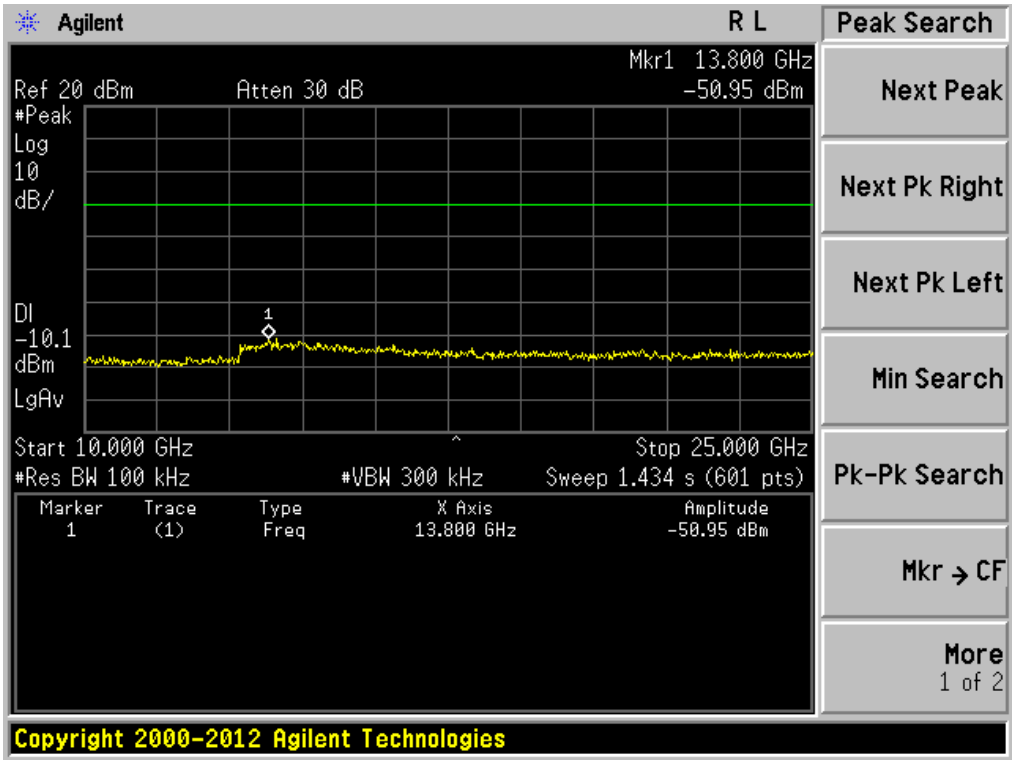


5.8.5 Test results

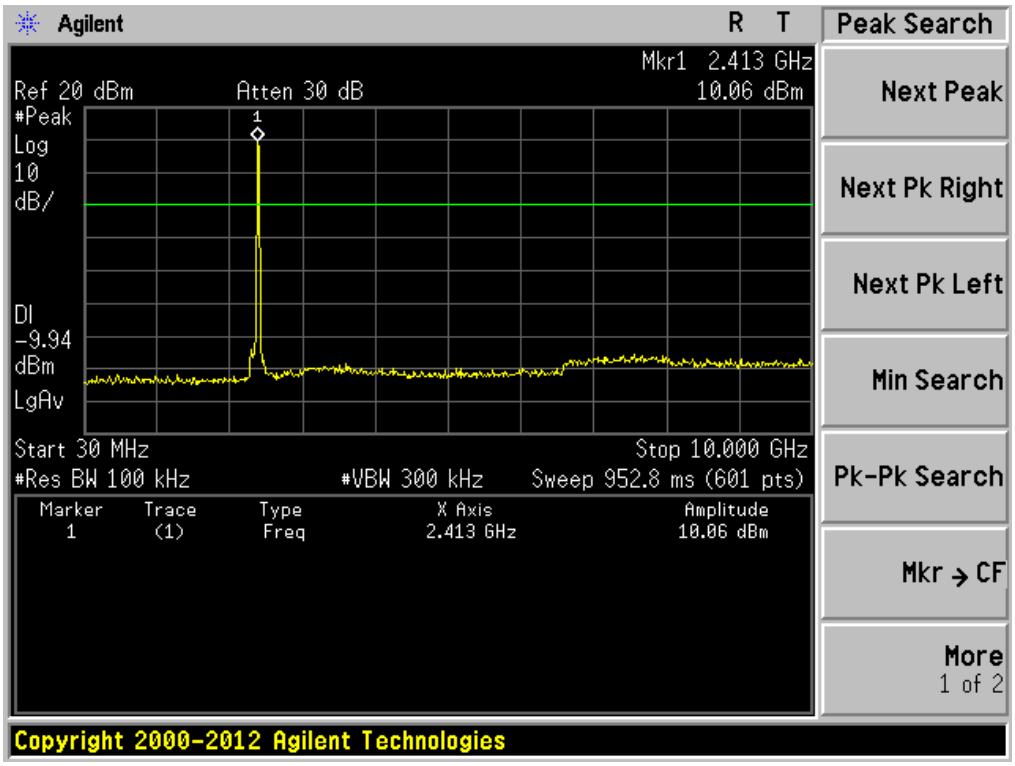
Result plot as follows:

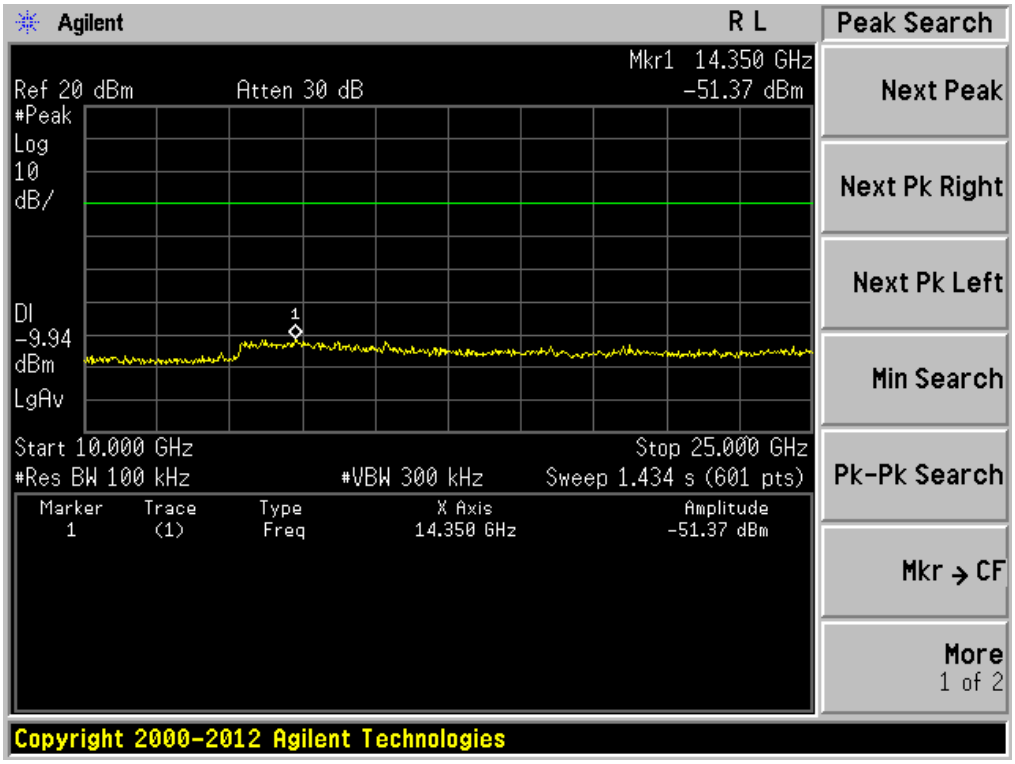
802.11b/lowest channel(worst case)



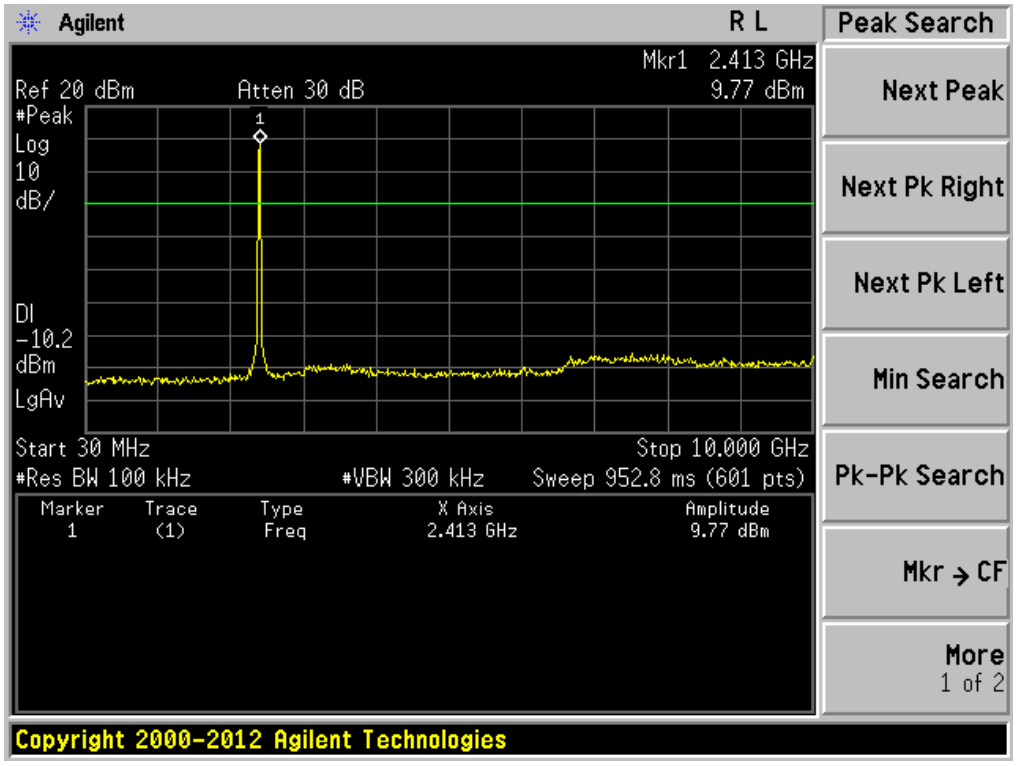


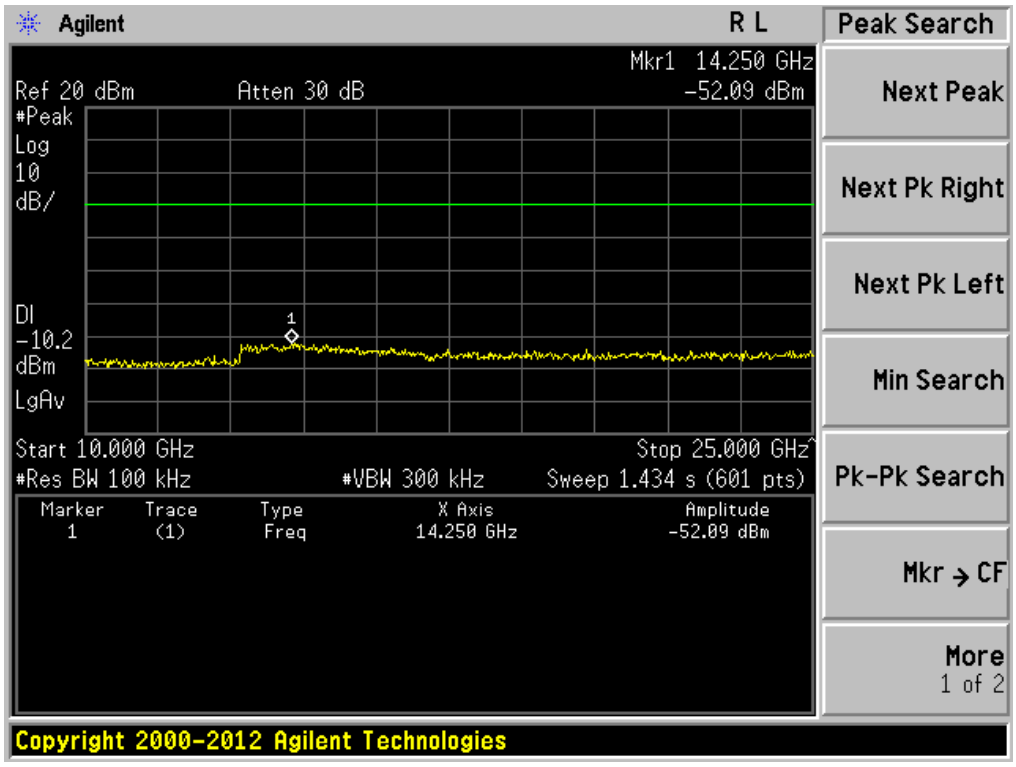
802.11g/lowest channel(worst case)





802.11n(HT20)/lowest channel(worst case)





802.11n(HT40)/lowest channel(worst case)